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1983 AMENDMENTS
TO THE PROGRAM OF STUDIES
FOR SENIOR HIGH SCHOOL

1. Front Page (i) **Amend** "Section 12 of The School Act" to read "Section 11 . . .".

2. **Replace** Contents pages v and vi.

3. Replace pages 69 to 72 (Driver and Traffic Safety, and Health and Personal Development)

4. Because of extensive changes in content for **Home Economics** and **Industrial Education**, pages 73 to 146 inclusive should be removed and replaced with Home Economics 1 to 11, and Industrial Education 1 to 93. All pages are identified with running heads.

   Ukrainian as a Second Language [pages 164(ii) to 164(viii)] is to be replaced with Ukrainian/1 to Ukrainian/9.

   A new section is to be added, **Spanish as a Second Language** , pages Spanish/1 to Spanish/6.

5. Replacement sheets should be substituted for the following:
   152(xii) - 152(xv) **Language Arts**
   237 - 240 **Social Studies**

6. **High School Biology**
   The biology program is now under review and pilot. It is expected that revised course outlines for Biology 10 and 20 will be implemented on a mandatory basis in September 1983 (course outline will follow during the summer). Biology 30 will be piloted in the 1983-84 school year.

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DRIVER AND TRAFFIC SAFETY EDUCATION 10

Rationale

Most people drive a vehicle. Driving is a task that requires considerable skill and involves decision-making. The primary consideration of this course is to provide students with the skills and attitudes that will make them safe drivers. The saving of life and limb and the reduction of accident rates in our streets and highways is a worthy objective. At a time when automotive registrations are increasing each year, and with them the number of drivers on the road, the risk of accidents also increases. This alone establishes a need for a course which will equip our young people to meet the challenge that faces them when they drive a motor vehicle.

Objectives

1. To develop in students attitudes of safety, courtesy and responsibility in the operation of a motor vehicle.
2. To provide a practicum for the development of the skills needed to drive an automobile.
3. To familiarize students with the various laws, regulations, and traffic control devices involved in driving.

Textual Materials

1. Student Text and References:
   (a) *Sportsmanlike Driving* - 3rd Canadian Edition - Canadian Automobile Association (McGraw-Hill).
   (b) *Behind The Wheel Guide* - For use with Sportsmanlike Driving (McGraw-Hill).
2. Teacher Reference:
   (a) *Sportsmanlike Driving* — Teacher's Edition (McGraw-Hill).

General Guidelines

Driver Education 10 was approved by the Minister of Education as an optional course for use in secondary schools in July 1971. The course was revised in 1981 to reflect a broader emphasis on safety education. The guidelines outlined below should be considered carefully prior to the implementation of the course.

1. Credits and Reporting

   Two credits will be allotted for the course. Enrolments and recommendations for credits should be reported by the school in the usual manner. The school should indicate the offering of the course on its Form A.

2. Course Description

   The course will consist of at least:

   (a) thirty (30) hours of classroom instruction

   (b) ten (10) hours of observation of in-car practice, and

   (c) ten (10) hours of behind-the-wheel practice.

3. Instruction

   Classroom instruction must be conducted by a certificated teacher.

   In-car observation and practice may be conducted by a certificated teacher or a non-certificated individual but must comply with the Driver Training Regulations under the Highway Traffic Act which are available through the Queen's Printer.

In order to conduct in-car observation and practice, a certificated teacher needs to:

(a) hold a valid Alberta Class "1" or Class "2" or Class "4" Operator's Licence.

(b) hold a valid Alberta Driver Instructor's Licence by passing an examination given by the Alberta Transportation Safety Branch covering:

(1) Traffic laws

(2) Safe driving practices

(3) Operation of motor vehicles

(4) Knowledge of teaching methods, techniques and practices.

The test can be written at an Alberta transportation safety branch office.

In order to conduct in-car observation and practice a person not holding an Alberta Teaching Certificate may qualify as a teacher aide provided that such a person:

(a) Holds a valid Alberta Class "1" or Class "2" or Class "4" Operator's Licence.

(b) Has completed a driver training course of at least thirty (30) hours acceptable to Alberta Education and holds a valid Alberta Driver Instructor's Licence.

Classroom instruction, in-car observation and in-car practice should be carefully coordinated by school authorities which have the responsibility of recommending students for credits.

It is highly recommended that the certificated teacher assigned to instruction and coordination of driver and traffic safety education, even though he doesn't do the in-car portion, have a driver education course recognized by Alberta Education.

The Alberta Transportation Safety Branch will offer the driver instructor's course in various locations as demand requires. The University of Alberta offers a summer half course in driver education every other year, or as demand requires.

4. Student Certificates for Insurance Consideration

Schools may provide students with certificates for insurance purposes upon successful completion of the course. Alberta Education will send certificates to schools on request. The principal or his designate must sign the certificate for each student to validate it. Order certificates from: Alberta Education, Curriculum Branch, Driver Education, Devonian Building, 11160 Jasper Avenue, Edmonton, Alberta T5K 0L2.

5. Student

The student involved in Driver and Traffic Safety Education 10 must:

(a) be at least fourteen (14) years of age

(b) possess an Operator's Licence or a valid Learner's Permit issued by the Motor Vehicles Division of the Department of the Solicitor General

(c) have written consent of parent or guardian, and

(d) be enrolled in an approved high school.

6. School

The school must secure the school board's approval in order to offer the course.

7. School Board

   The school board must:

   (a) carry insurance coverage as follows:
   "Passenger Capacity" - For injury or death of any one person as a result of any one accident in accordance with the provisions of The Motor Vehicle Administration Act.

   (b) arrange for training cars, and

   (c) finance the cost in any way deemed appropriate.

Content

Unit 1. Introduction

1. Historical background
2. History of the automobile
3. Driver characteristics
4. Driver responsibilities
5. Safety
6. Hazard perception
7. First aid

Unit 2. The Driver and Specific Elements in Society

1. Relations and attitudes to:
   — other drivers
   — pedestrians
   — bicycles, motorcycles
   — heavily loaded vehicles
   — construction and repair crews
   — emergency vehicles
   — animals

Unit 3. Driving Techniques

1. Predriving habits
2. Starting, stopping, backing up
3. Turns
4. Passing
5. Parking
6. Hills and curves
7. Positioning a vehicle in traffic
8. Traffic circles

Unit 4. The Driver and Society

1. Traffic laws
2. Traffic control devices
3. Law enforcement
4. Natural laws
5. The safe automobile
6. Insurance

Unit 5. The Individual Driver

1. General characteristics that affect driving
2. Physical defects
3. Fatigue and stress
4. Alcohol
5. Drugs
6. Maturity

Unit 6. The Driver and the Car

1. Buying a new or used car
2. Ownership responsibilities
3. Basic operations
4. Preventive maintenance
5. Trip planning
6. Fuel conservation

Unit 7. Conditions and Driving Skills

1. Hazardous road conditions
2. Hazardous weather conditions
3. Reduced visibility
4. City driving
5. Country driving
6. Freeway driving
7. Driving loaded vehicles
8. Animals
9. Other vehicles

Unit 8. The Traffic Accident: Before, At the Scene and After

1. Causes of traffic accidents
2. At the scene
3. Consequences of accidents
4. Winter survival

Unit 9. New Approaches to Reduction of Traffic Accidents

1. Defensive driving
2. Driving decisions
3. Emergency maneuvers
4. Safety devices
5. The superior driver
6. Enforcement of regulations

Unit 10. Motorcycling (Optional)

1. Development of motorcycle
2. Motorcycle systems

3. Basic operating procedures
4. Preventive maintenance
5. Protective riding gear
6. Being seen - conspicuity
7. Defensive operation
8. Evasive action
9. Passengers
10. Group riding
11. Physical fitness

HEALTH AND PERSONAL DEVELOPMENT 10

Primary References

1. Chittick. *Health For Canadians*. Macmillan Co. of Canada Ltd.
2. Giesel. *Personal Problems*.

Teacher's References

It is felt that a teacher offering the course at any or all grade levels should have access to the following references:

(a) Sorenson and Malm. *Psychology For Living*. McGraw-Hill.
(If a copy of Averill's *Introductory Psychology* is available it will be useful as an alternative.)

(b) Wheatley and Hallock. *Health Observation of School Children*.

Teachers will find one or more of the following references useful for background material in those sections of the course in Grades IX and X dealing with alcohol:

(a) *Manual of Reference For Alcohol Education*.
Department of Education, Manitoba.

(b) *Manual of Reference For Alcohol Education*.
Department of Education, British Columbia.

(c) Hirsch. *Alcohol Education. A Guide Book For Teachers*.

(d) McCarthy. *Teenagers And Alcohol*.

Course Content

Unit 1 — Success In High School

Orientation
Learning

Unit 2 — Our Physical Growth Into Adulthood

The Nature of the Body
Functions of the Body.

Unit 3 — Canada's Progress in Public Health

Why Public Health Service?
Improvement of World Health
The General Health Picture in Canada
Canada's National Health Program
Growing Recognition of the Alcohol Problem.

Unit 4 — Public Health In Alberta

Importance of Health Statistics
Public Health Measures in Alberta.

Unit 5 — Personality

The Meaning of Personality
Character
Personality Under Stress

Unit 6 — Group Life

The Group's Responsibilities to the Individual
The Family Group
The Group and Leisure Time.

Unit 7 — Man's Marvellous Control System

The Nervous System and Its Work
Disorder in the Nervous System

Unit 8 — Preventing Accidents and Meeting Emergencies

Protection in Public Transportation
Safety in Recreation
Safety in Industry
Alcohol and Safety.

Unit 9 — Selecting a Vocation

The Importance of Career Planning
The Importance of Interests and Aptitudes in Choosing a Vocation
Personality and Its Relationship to Vocational Choice
Job Families and Job Opportunities
Making the Most of Opportunities to Secure Employment
Effective Procedures in Applying for a Job
Making Good on the Job.

HOME ECONOMICS

Rationale

Home economics is an interdisciplinary study of the laws, conditions, principles and ideals concerned with people's immediate physical environment and their nature as social beings. It particularly focuses on the relationship between the two for the purpose of improving the quality of people's daily lives.

Home economics education contributes to the development of individuals and the family as functioning units of society by increasing knowledge and skills that can improve personal and family living. It provides experiences which will develop attitudes, skills, understandings and techniques essential for the maintenance and improvement of family living and which will be of value in work situations. The courses stress knowledge and skills that will create an awareness that the decisions one makes affect the quality of one's life.

Objectives

The home economics program in Alberta is defined by the following objectives:

1. To encourage individuals to maintain their physical health and to reinforce a positive attitude towards physical well-being.
2. To develop a self-sufficiency in food, clothing and shelter decisions.
3. To contribute to the mental health of individuals by developing skills in mutual understanding and adjustment within the family and the environment.
4. To prepare the individual for the sharing and adjustment necessary in personal relationships.
5. To develop competencies in the care and nurturing of young children.
6. To help individuals to understand and work with active and dependent older people.
7. To develop skills and improve decision-making in the use of leisure time.
8. To assist individuals to be discerning consumers with regard for conservation of resources.
9. To introduce students to careers related to home economics.
10. To equip individuals with personal skills needed in the employment setting.

Program Description

General

The high school home economics program is offered in three courses at three levels:

Food Studies - 10, 20, 30

Clothing and Textiles - 10, 20, 30

Personal Living Skills - 10, 20, 30

Food studies and clothing and textiles are sequential courses; personal living skills is non-sequential.

Home economics courses at the 10 and 20 levels may be offered for four or five high school credits. Home economics courses at the 30 level must be offered for five credits only.

Each home economics course has been structured into a modular format.

A module is a specific amount of subject matter and related activity carried out within 25 hours of classroom instruction time. Each home economics course contains some modules that are considered core or required and others which may be chosen as electives. Elective modules may be selected from modules not used in previous grades.

The modular structure is a mechanism for teacher planning. Core modules must be selected in any course and a specific sequencing is recommended in some cases. Selection of elective modules, however, should be determined by the nature of the facility, student needs and interests, and available resources.

Special Modular Structures

Locally Developed Modules

Locally developed modules are those developed by the teacher to meet a specific interest or need.

The structure of the module should be the same as for other modules, with generalizations, objectives, suggested learning activities, resources and a content checklist.

Justification for offering a locally developed module must be based on the fact that it is different from any other module offered in the course and meets a specific interest or need. Such a module must be reviewed by an Alberta Education home economics consultant prior to introduction.

Work Study Modules

Work study is employment undertaken by a student as an integral part of an approved school course which is under the cooperative supervision of a teacher-coordinator and the employers. (See the Junior-Senior High School Handbook for regulations pertaining to the work experience/study program.)

Research Modules

A research module is available at the 30 level only. It is a student centered module designed to give the opportunity for in-depth study of some aspect of the course. The topic may be the same as, or different from existing modules.

Clothing and Textiles

The clothing and textiles program includes a study of the significance of clothing and textile items to individuals in society, the nature of clothing and textile items and the acquisition and use of clothing and textiles in personal and family living. The practical experience of constructing items for home and personal use is a vehicle for teaching about clothing and textiles in addition to providing a medium for artistic expression and experience. Students will also be exposed to cultural and historical interrelationships, consumer responsibility, conservation of energy, design principles and job opportunities.

Objectives

Students will:

1. acquire basic information about clothing, textiles, and design
2. develop an understanding of personal, family, cultural, environmental and economic factors related to clothing behaviour and choices
3. develop skill in the management of human and non-human resources as applied to the provision of clothing and textile items
4. develop skills in selecting, constructing and evaluating clothing and textile items
5. acquire knowledge and skills for informed decision-making about

clothing and textile items, and an appreciation of the impact these decisions have on society as a whole.

Prescribed Learning Resources

Clothing and Textiles 10

Graef, July Lynn, and Joan Buescher Strom. *Concepts in Clothing.* (First Canadian Edition). Toronto: McGraw-Hill Ryerson Ltd., 1979.

Clothing and Textiles 20

Reader's Digest — *Complete Guide to Sewing, 1979.*

Clothing and Textiles 30

Reader's Digest – *Complete Guide to Sewing.* Montreal Reader's Digest Association (Canada) Ltd., 1979.

Palmer, Patti and Pletsch: *Easy, Easier, Easiest Tailoring.* Portland, Oregon: Palmer-Pletsch Associates, 1977.

Content

Clothing and Textiles 10

Clothing and Textiles 10 is the first course in the series. The course consists of four or five modules, the first three being core, the remainder elective.

Project Construction

- — selection and safe use of equipment, basic construction techniques, use of a commercial pattern, selection of appropriate fabric and notions
- — application of good management principles considering time, energy and other resources
- — evaluating projects using established standards

Clothing and Individual Expression

- — physical, social, and psychological aspects of clothing
- — elements in principles of design applied to clothing selection
- — wardrobe planning, clothing and fabric buymanship
- — project construction

Textiles and Care

- — fibre and yarn characteristics, fabric construction and fabric finishes
- — dyeing, printing and applied design
- — labelling and care of textile products, consumer rights and responsibilities

Clothing Construction 10 (1 or 2 modules)

- — pattern selection and alteration, suitability of fabrics and notions
- — skill development in garment construction, basic construction techniques
- — work planning, organization, standards for evaluation

Outdoor Clothing (1 or 2 modules)

- — physiological adaptations to the environment, cultural devices used to adapt to the environment

— specific techniques for constructing outdoor clothing and equipment

Fabric Arts

— history and application of several fabric arts techniques

— elements and principles of design

— preparation and evaluation of fabric arts project

Clothing and Textiles 20

The Clothing and Textiles 20 course consists of four or five modules. The first three listed below are core, the remainder are elective.

Advanced Textiles

— history of textile development, fibre characteristics, man-made fibres, weaves, knits

— new fabric and finish technology, textile laws, trademarks

Pattern Alterations: Fit

— pattern alterations, fitting procedures, fitting during project construction

— evaluation of fit, construction of the fitted garment

Clothing Construction

— advanced construction techniques, construction of garments or other fabric items

— management of sewing project considering resources available, evaluation of projects according to standards of construction and fit

Fashion Industry/Careers

— production and distribution of textiles, consumption patterns of individuals in families

— career opportunities in the fashion industry, examination of Canadian fashion industries

— government regulations, merchandising techniques, consumer skills

Special Fabrics

— special fabric techniques, project construction

— good management principles, evaluation of the project

Household Textiles

— selection and care of household textiles including carpets, window treatments, linens and upholstery

— construction of a project, evaluation of project considering cost, skill development, design functionality, and energy conservation.

Historical/Cultural Roles of Clothing

— social, political, economic, and cultural influences on clothing

— fashion terms, period fashions

— cultural and social aspects of clothing

Sports Clothing

— physiological reactions to environmental conditions

— functionality of clothing and clothing design

— construction and evaluation of a project

Clothing and Textiles 30

The Clothing and Textiles 30 course consists of five modules. The first one listed below is core, and the remainder are elective.

Advanced Construction I

— advanced construction techniques for tailored garments and other advanced fabric items

— fitting, alterations, shaping

— good management in the construction of an advanced project, evaluation of the project

Advanced Construction II

— further development of construction techniques and management principles in the preparation and construction of advanced garments and other items

Special Fabrics II

— problem solving, experimentation with special fabrics

— construction of a project, evaluation of techniques and standards achieved, comparison with commercially produced items

Designers

— concepts of design, elements, principles, and individuality

— Canadian and international designers, Canadian fashion industry, career opportunities

— design and construction of a fabric item, evaluation of projects

Clothing for Special Needs

— adaptations of clothing design, construction techniques and fabrics for special physical or environmental circumstances

— construction and evaluation of a project suited for a special physical or environmental need

Pattern Making

— basic principles of shaping fabrics using flat pattern, draping, or combination techniques

— concepts and principles of design, construction and management applied to a student design project

— design and construction of a project

Clothing and Culture

— research into the development and function of clothing in selected cultural and historic groups

— construction and evaluation of an ethnic design

— new technologies in fibres and processes, political and social influences

Food Studies

Food studies at the high school level comprises an in-depth study of all aspects of food, and the relationship of food to health, values and lifestyles.

Food studies will enable students to examine the significance of food as related to physiological, sociological and psychological satisfactions in their

daily lives. Chemical and physical properties and factors affecting changes in these properties are studied as well as the production and consumption of food. Practical experiences encourage the development of consumer, management, and decision-making skills.

Objectives

Students will:

1. acquire basic nutrition information and apply it to meal planning, food choices and food preparation
2. develop an understanding of personal, family, cultural, environmental and economic factors related to food behaviour and choices
3. develop skill in the management of human and non-human resources as applied to the selection and preparation of food
4. develop skills and techniques in planning, preparing and presenting food
5. acquire knowledge and skills for informed decision-making in the marketplace and in the home, and an appreciation of the impact these decisions have on society as a whole;
6. develop skills in the safe and sanitary handling of food and equipment.

Prescribed Learning Resources

Food Studies 10

Shank, Dorothy E., et al. *Guide to Modern Meals,* 3rd edition, (Canadian) Toronto, McGraw-Hill, 1981.

Food Studies 20

Largen, V. *Guide to Good Food.* South-Holland, I. H., Goodheart-Willcox, 1979.

Food Studies 30

Williams, Sue R. *Basic Nutrition and Diet Therapy,* 6th edition, C. V., Mosby Company, 1980.

Content

Food Studies 10

The Food Studies 10 course consists of four or five modules (corresponding to four or five credits). The first four listed below are core, the remainder are elective.

Introduction to Food Studies

- — factors affecting food choices and eating habits, nutrition
- — safety and sanitation, equipment and procedures

Nature of Food — A (fruits and vegetables/breads and cereals)

- — conservation of nutrients
- — chemical and physical properties, cookery principles
- — production and consumption patterns
- — significance of these foods

Nature of Food — B (milk products and eggs)

- — selection, storage, and cookery principles
- — conservation of nutrients

— chemical and physical properties

— significance of milk products and eggs

Nature of Food — C (meats and alternates)

— selection, storage, and cookery principles

— conservation of nutrients

— chemical and physical properties

— significance of meats and alternates

Food Planning for Today's Lifestyle

— principles of food planning

— food patterns for various lifestyles

— management and decision-making related to provision of food

Food Planning: Special Situations

— health problems related to food intake

— application and modification of principles of food planning for special situations

Food for Independent Living

— adaptations of principles of food planning for independent lifestyles

— resource and equipment management

Food Studies 20

The Food Studies 20 course consists of four or five modules (corresponding to four or five credits). The first three are core, the remainder are elective.

Food Needs and Patterns

— evaluation of individual food patterns

— assessment of current nutrition issues and trends and individual nutritional needs

— biological process of nourishing the body including digestion, absorption and metabolism

Advanced Foods — A (fruits, vegetables, breads and cereals)

— advanced techniques in selection and preparation of these food groups

— developments in production and processing of these foods with emphasis on ecological and economic impact in Alberta

— food service careers

Advanced Foods — B (meat, milk, milk products and eggs)

— advanced techniques in selection and preparation of these groups

— protein complementarity

— developments in production and processing of these foods with emphasis on ecological and economic impact in Alberta

— food service careers

Food Handling and Processing

— government regulations relating to food handling and processing

— food preservation

— marketing cycles of food

Canadian Food Heritage

— influence of beliefs, values and resources on food studies in Canada

— ethnic and regional food patterns in Canada

International Foods

— symbolic meaning of food within given cultures

— relationship of food patterns to customs of a country

— techniques of preparation of ethnic foods

Food Studies 30

The Food Studies 30 course consists of five modules. The first two listed below are core, the remainder are elective.

Individualizing Food Patterns

— nutrient needs through the life cycle

— adaptation of diets to meet specific disease, mobility or metabolic limitations

— career opportunities available in the area of special diets

Advanced Preparation Techniques

— concepts and principles of advanced food preparation and presentation techniques

— quantity cookery

— art of creative cookery

Inadequate Nutrition

— world food supply and consumption patterns

— physical and psychological aspects of inadequate nutrition

— world food problems and potential solutions

Entertaining with Food

— food as a socializer

— application of the principles of meal planning to hospitality and entertaining

— etiquette and acceptable behaviour in a variety of settings

Carbohydrates/Fats and Oils

— forms, sources and uses of carbohydrates and fats

— nutritional requirements and implications of over-consumption

— preparation of food products high in carbohydrates or fats

Kitchen Planning

— kitchen planning philosophies

— safe, efficient use of space and equipment

— resource conservation

— safety, maintenance and simple repairs

Personal Living Skills

The high school personal living skills program is offered at the 10, 20, and 30 levels. Personal living skills courses can be offered to students without prerequisites. Courses at the 10 and 20 levels may be offered for four or five high school credits. At the 30 level, personal living skills must be offered for five credits only.

Each home economics course has been structured into a modular format. A module is a specific amount of subject matter and related activity carried out within 25 hours of classroom instruction time. A personal living skills course must contain at least one module from each of the "Personal Skills", "Family Skills", and "Applied Skills" groupings (see Grid, page 00). The remaining one or two modules may be selected from any of the groupings.

Personal living skills courses emphasize the development of decision-making skills.

Objectives

Students will:

1. acquire basic information about human development, family relationships, and environmental interrelationships
2. develop an understanding of personal, family, cultural, environmental and economic factors related to lifestyle choices
3. develop skill in the management of human and non-human resources
4. develop skills and techniques in personal decision-making and interpersonal relationships
5. apply management skills to problems of daily living
6. be given an opportunity to understand and work with active and dependent older people
7. develop skills and improve decision-making in the use of leisure time
8. assist individuals to be discerning consumers with regard for conservation of resources
9. be introduced to careers related to home economics
10. be equipped with personal skills needed in the employment setting

Prescribed Learning Resources

There are no prescribed resources for the personal living skills courses because of the wide variety of topics covered in any personal living skills course. See the curriculum guide for recommended resources.

Content

Personal Living Skills

Each of the three personal living skills courses must contain at least one module from each of the three groups: personal, family and applied skills. The remaining modules needed to make up a course may be selected from any of the groups. The recommended course level is indicated in the brackets following the module title.

Personal Skills Group

Personal Awareness

- — self-concept, personal understanding, values, goals, and attitudes
- — physical and social development, psychological needs

Resource Management (10/20)

- — values, goals, standards, needs, wants
- — human and non-human resources, conservation, substitution, money management
- — personal management skills

Managing a Lifestyle (20/30)

- — elements of management, decision-making
- — personal goals, lifestyle choices, value orientations

Living Skills Within Relationships (20/30)

- — individual differences, communication skills, personal needs
- — different family structures, building and maintaining relationships, stages of life cycle

Family Skills Group

Child Study (10/20)

- — stages of child development, child behaviour theories
- — physical and psychological needs of young children, costs of child care, community resources

Teen-Parent Relationships (10/20)

- — adolescent needs, peer pressures
- — developing independent living skills, communication skills
- — family rights and responsibilities, family types and roles

Human Sexuality (10/20/30)

- — anatomy and physiology, body care
- — socio-cultural development, sex roles, stereotyping
- — dating, marriage relationships

Parenting (30)

- — values and beliefs, legal and economic aspects of child raising
- — child abuse, support systems, community resources

Marriage (30)

- — personal development, relationships, commitment
- — customs, legal and social obligations, expectations
- — challenges, crises in marriage, community resources

Applied Skills Group

Living On Your Own (10/20/30)

- — housing needs, life cycle, availability of resources
- — types of housing, guidelines for evaluating housing, legal rights and responsibilities

Designing Home Environments (20/30)

- — elements and principles of design in housing, historical and cultural influences
- — psychological and social influences, lifestyles
- — planning household interiors, home maintenance, career opportunities

A Study of Housing (30)

- — environmental, social, and economic constraints in home design and availability of housing
- — financing housing, rights and responsibilities, energy efficiency and conservation
- — community responsibilities, future home design, careers in home design

Senior Side of Living (20)

- — physical, psychological, mental changes with aging, cultural attitudes towards aging
- — economic, housing, nutrition needs with aging
- — community resources, job opportunities for the aged

Community Services for Children (10/20)

- — legal, moral, and ethical responsibilities towards children
- — community and private facilities for children, careers in child care
- — skills and understandings needed for working with children

Historical Family Crafts (10/20/30)

- — food, clothing and shelter provisions in the past
- — practice of historical crafts in current applications

The Family in Crisis (20/30)

- — crisis and stress in family life situations
- — support services, legal responsibilities, community resources available for a family in crisis
- — environmental crisis, coping with disaster management skills

INDUSTRIAL EDUCATION

Rationale

Industrial education is a program consisting of courses which provide a continuum of experiences, starting with exploratory activities in the junior high school and expanding in the high school to the development of skills related to career fields. This development of the student's skills is planned for through courses in industrial and vocational education culminating in on-the-job work experience, or entry into a job or post-high school institution for further education.

The program consists of courses ranging from those designed for an exploration of the technologies and trade areas to units of practical preparation for a career. In the process the courses develop the student's self-knowledge, talents and skills.

For information on sequencing and course description, refer to the *Handbook in Industrial Education for Guidance to Teachers, Counsellors and Administrators.*

INDUSTRIAL EDUCATION 10, 20, 30 PROGRAMS

There are two parts to the industrial education program. The first part consists of the Industrial Education 10, 20, 30 series of courses and is designed for career orientation. These courses were developed primarily for students in laboratories that utilize the multiple activity approach as found in most smaller schools, but they can be taught in unit shops as well.

The second part consists of the Industrial Education 12, 22, 32 series of courses and is intended for career development. The courses are planned for use in schools where facilities are available to teach specific occupational areas.

Students may progress from the Industrial Education 10, 20, 30 series to the 22 level courses upon meeting specified basic prerequisites or upon recommendation of their principal.

Both sections of the program focus on six career fields. These are:

Graphic Communications
Mechanics
Construction and Fabrication
Electricity-Electronics
Personal Services
Horticulture

The Industrial Education 10, 20, 30 courses consist of a number of 25-hour modules related to the career fields while the Industrial Education 12, 22, 32 courses consist of a number of 25-hour modules of specific occupational content. Completion of seven five-credit modules qualifies a student for recognition by the Apprenticeship Branch for credit towards a journeyman's certificate.

It is left to the administrators of the school to offer the courses or combination of courses best suited to the needs and interests of the students and the financial resources of the district.

Courses offered at the 22 and 32 level have to meet special criteria for staff and facilities. The Industrial Education Consultant must authorize these in order to qualify the students for vocational grants.

Objectives of Industrial Education

The industrial education program can help achieve the Goals of Schooling and Education. The course objectives are more focused and give direction to the teacher.

The objectives of industrial education are classified in three areas with the following purposes:

A. **Personal Growth:**

To provide opportunities for the individual growth of the student through the development of acceptable personal and social values necessary in a productive society.

1. To provide a technical environment which motivates and stimulates individuals to discover their interests and develop personal and social responsibilities.
2. To assist in the development of positive attitudes toward safety.
3. To assist in the development of positive attitudes toward conservation and environment.
4. To assist in the development of consumer literacy.

B. **Career Exploration:**

To provide the student with experiences which will assist him or her in making realistic career choices.

1. To provide the student with an opportunity, within a technical environment, to become acquainted with the general occupational characteristics of a variety of career fields.
2. To relate the student's interests, abilities, likes, dislikes and values to several career fields.

C. **Occupational Skills:**

To develop basic competencies, integrating cognitive and psychomotor skills related to families of occupations.

1. To provide safe exploratory experiences in the use of tools, energy, equipment and materials appropriate to various technologies prevalent in a productive society.
2. To develop an understanding of the interrelationships of various technologies.
3. To provide a technical environment which permits students to synthesize their accumulated knowledge in the solution of practical problems, and to assist students to develop habits that will be conducive to the establishment of a safe environment.

Concepts

Each of the program areas identifies concepts unique for that area. In addition, the nine concepts common to the total program and incorporated in every module where appropriate are:

1. Consumer Awareness
   - — quality
   - — effective advertising
   - — specifications
   - — dollar value
   - — buying procedures
   - — availability
   - — parts

2. Environmental Implications
   - — time element (past, present, future)
   - — rates of consumption
   - — conservation
   - — alternatives
   - — pollution (land, air, water)

3. Graphic Interpretation
   — schematic
   — symbols
   — drawing interpretation
   — visuals
   — technical drawing and interpretation

4. Measurement
   — British Engineering System (present English systems)
   — System Internationale (SI)
   — accuracy
   — tools and instruments
   — tolerances
   — precision
   — estimating
   — approximating
   — computations (including graphs, charts, interpolation)

5. Career Information
   — benefits
   — unionism
   — local opportunities
   — job mobility (vertical, horizontal, geographic)
   — future
   — retraining and upgrading
   — jobs vs. careers

6. Societal Implications
   — time (past, present, future)
   — economic
   — life patterns
   — status
   — values and mores

7. Technological Implications
   — costs, benefits, consequences (C.B.C.)
   — resource use and abuse
   — tool development and use
   — manufacturing
   — servicing
   — obsolescence
   — design process
   — planning

8. Safety
   — unsafe conditions
   — unsafe acts

9. Historical Perspective
   — the historical development of the discipline

1982 Revision
INDUSTRIAL EDUCATION 10, 20, 30 Matrix
(Each module is 25 to 33 hours in length)

CAREER FIELD			
A. ELECTRICITY -ELECTRONICS (yellow package)	**B. MATERIALS** (green package)	**C. POWER TECHNOLOGY** (blue package)	**D. VISUAL COMMUNICATIONS** (orange package)
1. Basic Electricity and Electronics I	1. General Woods	1. Conventional Heat Engines	1. Introduction to Offset Lithography
2. Basic Electronics II	2 Building Construction (Frame)	2. Small Engine Repair	2. Process Photography — Line
3. Equipment Servicing	3. Building Construction (Sub-Trades)	3. Small Engine Tune-up and Troubleshooting	3. Process Photography — Halftone
4. Logic Circuits	4 Cabinet Construction (Basic)	4. Mechanical Systems	4. Layout and Design
5. Computing Systems	5. Cabinet Construction (Advanced)	5. Non-conventional Power Sources	5. Topographical and Architectural Drafting
6. Introduction to Computers	6. General Metals	6. Electrical and Electronic Systems	6. Relief Printing
7. Computer Programming — Introductory	7. Sheet Metal	7. Electro Mechanical and Electronic Control	7. Screen Process Printing
8. Computer Programming — Industrial Applications	8. Machine Metal	8. Appliance Repair and Troubleshooting	8. Black and White Photography — Basic
9. Communications — Introductory	9. Arc Welding	9. Automobile Maintenance	9. Black and White Photography — Advanced
10. Communications — Systems	10. Oxy-Acetylene Welding	10. Fluid Power	10. Color Photography
11. Electronic Design	11. Foundry	11. Automobile Tune-up	11. Mechanical Drafting
12. Electronic Construction	12. Earths	12. Automobile Repair	12. Customer Drafting
	13. Plastics	13. Automobile Ownership	13. Offset Printing Production
	14. Textiles		
	15. Foods		

E. GENERAL MODULES

Three modules of a general nature also are available. These modules may be used by a student or group only once. These are:

1. Research Module
2. Developmental Module
3. Production Science Module

A. Electricity-Electronics

Introduction

Energy in the form of electricity has become very important. Power is basic to our standard of living. With the concern for the efficient utilization of energy, the study of electrical technology takes on increased significance.

There are twelve modules of content which provide the student and teacher considerable choice in building the type of program best suited to the situation. The modules listed may be taught in any order that the teacher finds most appealing.

The major concepts addressed in electricity-electronics technology are:

1. Energy Conversion
2. Energy Control
3. Energy Transfer
4. Energy Utilization

Objectives

The objectives of the modules in electricity-electronics are:

1. To make the student aware of a number of ways to convert energy forms and to use various methods of transferring and controlling the converted energy to an intended use.
2. To give the student an opportunity to practise troubleshooting techniques, utilizing analytical thinking.
3. To give the student an opportunity to learn basic binary concepts and logic circuits and to study some practical subsystems fundamental to communication, control and computer applications.

Prescribed Learning Resources

Grob, B. *Basic Electronics*. McGraw-Hill Ryerson, 1977.

Malvino, A.P., and Leach, D.P. *Digital Principles and Applications*. McGraw-Hill Ryerson, 1981.

Miller, R., and Culpepper, F.W. *Energy: Electricity/Electronics*. Gage Publishing Co., 1982.

Horn, C., and Poirot, J. *Computer Literacy: Problem Solving with Computers*. Sterling Swift, 1981.

Robertson, L. Paul. *Basic Electronics I*. Mid American Vocational Curriculum Consortium (MAVCC).

Content

Module One. **Basic Electricity and Electronics 1**

1. Safety
2. Direct Current
   - — terms
   - — calculations
   - — resistance
   - — voltage
   - — current
   - — power
   - — conductors and insulators
   - — Ohm's Law
   - — circuits
   - — magnetism
   - — motors

Module Two. **Basic Electronics II**

1. Safety
2. Electronic Concepts, Components, Instruments
   — alternating current
   — rectifiers
   — semi conductors
   — transistors
   — capacitance
   — circuits
   — inductance
   — A.C. generator

Module Three. **Equipment Servicing**

1. Safety
2. Servicing Electrical and Electronic Equipment
   — test equipment
   — tools
   — components
   — schematics
   — repair

Module Four. **Logic Circuits**

1. Logic
   — gates
   — numbering systems
   — logic gates

Module Five. **Computing Systems**

1. Digital Computers
2. Analog Computers
3. Conversions

Module Six. **Introduction to Computers**

1. Computers
   — uses
   — types
   — terminology
   — systems
   — classes
   — history
   — language
   — flow charting

Module Seven. **Computer Programming. Introductory**

1. Programming
   — procedures
   — language
   — arithmetic operations
   — statements and commands
   — variables
   — input
   — storage
   — branching
   — loops
   — flow charting
   — disc operation

Module Eight. **Computer Programming. Industrial Applications**

1. Industrial Applications
   - — storage and retrieval
   - — problem solving
   - — control
   - — simulation

Module Nine. **Communications. Introductory**

1. Amplification
   - — circuits
   - — limitations
   - — variations
   - — audio systems
   - — performance
   - — impedance

Module Ten. **Communications. Systems**

1. Radio Communication
   - — principles of transmission
   - — principles of reception
   - — R.F. oscillator
   - — transmission
   - — receiving
   - — applications
   - — television

Module Eleven. **Electronic Design**

1. Electronic System Design
   - — planning
   - — parameters
   - — parts
   - — prototype
   - — circuits
   - — assembly
   - — production costs

Module Twelve. **Electronic Construction**

1. Safety
2. Construction Techniques

B. Materials

Introduction

The materials modules consist of content representing the major construction and fabrication materials and processes used in Canada. Construction and fabrication continue to be important and necessary activities in our society.

There are fifteen modules of content which provide the student and the teacher with considerable choice in building the type of program best suited to the situation. Teachers should select modules utilizing the resources available and in harmony with the needs of their students.

The modules as listed may be selected in the order that the teacher finds most appropriate. Two modules taught for a total of 65 hours will serve as a prerequisite for the appropriate "22" courses in building construction, machine shop, sheet metal and welding.

Objectives

The objectives of the modules in materials are:

1. To make the student aware of the variety of career areas represented by the materials area.
2. To give the student an opportunity to practise processes and skills required to construct with materials.
3. To give the student an opportunity for analytical thinking in planning and constructing or fabricating a project.

Prescribed Learning Resources

Miller, H.G. *Hand and Machine Woodwork* (Metric). Gage Publishing, 1980.

Landers, J.M. *Construction — Materials, Methods, Careers.* Goodheart-Willcox Publishing, Latest Edition.

Feirer, J.L. *Cabinet Making and Millwork.* Chas A. Bennett Co. Inc., Latest Edition.

Feirer, J.L. *General Metals.* McGraw-Hill Ryerson, 1976.

Zinngrabe, C.J. Schumacher, F.W. *Sheet Metal Machine Processes.* Delmar Publishers, 1975.

Zinngrabe, C.J., Schumacher, F.W. *Sheet Metal Hand Processes.* Delmar Publishers, 1974.

Krar, S.R., St. Amand, J.E. *Machine Shop Training.* 3rd Edition, McGraw-Hill Ryerson, 1977, c/w *Machine Shop Operation — Visu-text.*

Pender, J.A. *Welding.* 2nd Edition, McGraw-Hill Ryerson, 1978.

Smith, R.E. *Patternmaking and Founding.* McKnight Publishing, 1954.

Brennan, T.J. *Ceramics.* Goodheart-Willcox Publishing, Latest Edition.

Cherry, R. *General Plastics.* McKnight Publishing, 1969.

Content

Module One. **General Woods**

1. Safety
2. Extraction, Processing and Identification
3. Project Development
4. Measurement and Layout
5. Shaping, Forming and Fastening
6. Finishing

Module Two. **Building Construction (Frame)**

1. Safety
2. Planning and Design
3. Construction Guidelines
4. Material Utilization
5. Measurement and Layout
6. Construction Methods

Module Three. **Building Construction (Sub-trades)**

1. Safety
2. Sub-trades
   — concrete, framing, flooring, roofing
   — heating
   — electrical
   — insulation
   — drywall
   — bricklaying, tile, glass
   — siding, stucco
   — cabinets

Module Four. **Cabinet Construction (Basic)**

1. Safety
2. Materials
3. Project Development
4. Measurement and Layout
5. Finishing

Module Five. **Cabinet Construction (Advanced)**

1. Safety
2. Materials
3. Project Planning
4. Layout
5. Shaping, Forming, Fastening
6. Finishing

Module Six. **General Metals**

1. Safety
2. Extraction and Processing of Raw Materials
3. Product Planning
4. Metal Shaping Processes

Module Seven. **Sheet Metal**

1. Safety
2. Extraction and Processing of Raw Materials
3. Product Planning and Design
4. Shaping Processes

Module Eight. **Machine Metal**

1. Safety
2. Extraction and Processing
3. Product Planning
4. Shaping Processes

Module Nine. **Arc Welding**

1. Safety
2. Extraction and Processing of Raw Materials

3. Product Planning and Design
4. Shaping Processes

Module Ten. **Oxy-Acetylene Welding**

1. Safety
2. Extraction and Processing Raw Materials
3. Project Planning
4. Shaping Processes

Module Eleven. **Foundry**

1. Safety
2. Extraction and Processing Materials
3. Product Planning
4. Shaping Processes

Module Twelve. **Earths**

1. Safety
2. Sources
3. Product Planning
4. Shaping Processes

Module Thirteen. **Plastics**

1. Safety
2. Sources and Processing
3. Classification and Characteristics
4. Shaping, Molding and Fabricating

Module Fourteen. **Textiles**

1. Safety
2. Types of Fabric
3. Clothing Selection, Core and Construction

Module Fifteen. **Foods**

1. Safety
2. Sanitation, Nutrition, Management and Food Preparation

C. Power Technology

Introduction

With the concern for the efficient utilization of energy, the study of power technology takes on increased significance.

There are thirteen modules of content which provide the student and teacher considerable choice in building the type of program best suited to the situation. The modules listed may be taught in any order that the teacher finds most appropriate.

The major concepts addressed in power technology are:

1. Energy Conversion

2. Energy Transfer
3. Energy Utilization

Objectives

The objectives of the modules in power technology are:

1. To make the student aware of a number of ways to convert energy forms and to use various methods of transferring the converted energy to an intended use.
2. To give the student an opportunity to practise troubleshooting techniques utilizing analytical thinking.

Prescribed Learning Resources

Crouse, W.H. *Automotive Mechanics*. McGraw-Hill Ryerson, 1980.

Thiessen, F., Dales and Davis. *Automotive Principles and Service*. Prentice Hall of Canada, 1981.

Content

Generalizations, concepts and sub-concepts are outlined on the following pages. Teachers are expected to develop additional objectives and activities to supplement the identified content and maintain relevancy.

Module One. **Conventional Heat Engines**

1. Safety
2. Identification and Use of Tools and Equipment
   — hand tools
   — power tools
   — measuring instruments
   — care and maintenance
   — special tools
3. Combustion Engines
   — energy forms
   — types of combustion engines
   — basic maintenance
4. Alternate Energy Sources
   — sources
   — applications

Module Two. **Small Engine Repair**

1. Safety Practices
2. Tune-up and Troubleshooting
   — systems
   — diagnostic tests
   — servicing and tune-up
   — manuals and specifications
   — ordering parts and costing

Module Three. **Small Engine Tune-up and Troubleshooting**

1. Safety
2. Repair
   — diagnostic tests
   — engine overhaul
   — costing

Module Four. **Mechanical Systems**

1. Safety
2. Power Transmission
   — definitions
   — transmission devices
   — lubrication
   — seals
   — operation

Module Five. **Non-Conventional Power Sources**

1. Safety
2. Electricity and Electric Motors
   — magnetism
   — electric components
   — measurement
   — motors

Module Six. **Electrical and Electronic Systems**

1. Safety
2. Electrical Devices in Automobiles
   — magnetism and electricity
   — alternators
   — regulators
   — motors
   — measurement

Module Seven. **Electro-Mechanical and Electronic Control**

1. Safety
2. Electronic Circuitry
   — schematics
   — components
   — ignition system
   — appliances

Module Eight. **Appliance Repair and Troubleshooting**

1. Safety
2. Electrical Appliances
   — schematics
   — appliance operation
   — diagnosis
   — testing
   — repair

Module Nine. **Automobile Maintenance**

1. Safety
2. Regular Maintenance
   — exterior — interior
   — lubrication
3. Systems
   — cooling
   — braking
   — steering
4. Tires

5. Lights
6. Other — Windshield, Shocks, Exhaust

Module Ten. **Fluid Power**

1. Safety
2. Hydraulic Fluid Devices
   — Pascal's Law
   — hydraulic jack
   — hydraulic brakes
   — power steering
   — automatic transmission
3. Pneumatic Power Devices
   — laws
   — devices — compressors, turbo charger, air tools
   — air conditioning
   — pollution control

Module Eleven. **Automobile Tune-up**

1. Safety
2. Tune-up
   — diagnosis
   — inspections and tests
   — pollution factors
   — ignition system
   — fuel system

Module Twelve. **Automobile Repair**

1. Safety
2. Major Repairs
   — brakes
   — engines
   — transmission
   — drive line
   — electrical system
   — body work

Module Thirteen. **Automobile Ownership**

1. Safety Inspection
2. Owner Responsibilities
   — legal
   — moral
   — financial
   — insurance
3. Purchasing an Automobile
   — preparation
   — finances
   — survey
   — inspections
   — purchase
4. Owner Maintenance and Operation
   — maintenance and service
   — attachments — trailers
   — off-road vehicles

D. Visual Communications

Introduction

Visual communications includes a broad spectrum of activities ranging from sketching to printing an illustrated book. With communications playing such a dominant part in our lives it serves as a useful subject for study.

The thirteen modules that comprise the program provide a broad scope of content which allows the student and teacher considerable choice in building the type of course best suited to the situation. The modules listed may be taught in any order the teacher finds most appealing.

The major concepts addressed in visual communications are:

1. Image Creation
2. Image Generation
3. Image Conversion
4. Reproduction
5. Finishing

Objectives

The objectives of the modules in visual communications are:

1. To provide an opportunity for the student to learn about the materials and processes used in the graphics industry.
2. To give the student practice in the approved methods and procedures required for drafting, printing, photography and duplicating processes.
3. To acquaint the student with opportunities in the field of graphic communications.

Prescribed Learning Resources

Bockhus H. William. *Advertising Graphics*. Macmillan Canada, 2nd Edition, 1974.

Broekhuizen, Richard J. *Graphic Communications*. McKnight Publishers, Latest Edition.

Cogoli, John E. *Photo Offset Fundamentals*. Van Nostrand Reinhold Ltd., 1973.

Jensen, C.H. *Architectural Drawing and Design for Residential Construction*. McGraw-Hill Ryerson, 1982.

Muse, Ken. *Photo Two*. Prentice Hall Inc., 1977.

Kodak. *101 Experiments in Photography*. Eastman Kodak.

Bailey, Adrian. *Color Photography*. Random House Publishers.

Kodak. *Color Data Guide*. Eastman Kodak, 1980.

Stirling, N. *Introduction to Technical Drawing*. Gage Publishing Co., (Metric Edition) 1977.

Content

The modules as listed may be selected in the order that the teacher finds most appropriate. Two modules taught for a total of 65 hours will serve as a prerequisite for the appropriate 22 courses in drafting, graphic arts or visual communications.

Module One. **Introduction to Offset Lithography**

1. Safety
2. Offset Lithography
   — image creation
   — image generation
   — image conversion
   — reproduction
   — finishing
3. Careers

Module Two. **Process Photography - Line**

1. Safety
2. Line Photography and Offset Preparation
   — design principles
   — layouts
   — camera work
   — reproduction
   — finishing

Module Three. **Process Photography - Halftone**

1. Safety
2. Halftone Photography and Offset Reproduction
   — design
   — measurement
3. Operation of Process Camera
   — screening
   — preparation of flats
   — plate making
4. Offset Reproduction
5. Finishing

Module Four. **Layout and Design**

1. Safety
2. Creative Design, Layout and Reproduction
   — commercial art techniques
   — lettering
   — tools
   — materials
   — masters
   — offset press

Module Five. **Topographical and Architectural Drafting**

1. Topographical Drafting
   — surveying
   — photogrammetry
   — cartography
2. Architectural Drafting
   — drafting practices
   — floor plans — elevations
   — presentation drawing
   — perspective drawing

Module Six. **Relief Printing**

1. Safety

2. Relief Printing
   — measurement
   — layout techniques
   — flexography
   — photo engraving
   — reproduction — platen press, sign press, rubber stamp
   — finishing

Module Seven. **Screen Process Printing**

1. Safety
2. Screen Process Printing
   — design development
   — layout for hand cut of photographic stencil
   — paper stencil
   — preparing photographic stencil
   — screen frame
   — printing
   — finishing

Module Eight. **Black and White Photography — Basic**

1. Safety
2. Photography (Black and White)
   — elements of photographic composition
   — types of photography
   — camera theory and operation
   — films
   — developing
   — paper and finishing

Module Nine. **Black and White Photography — Advanced**

1. Safety
2. Black and White Photography
   — photographic composition
   — lighting
   — camera handling
   — lenses
   — flash photography
   — film processing
   — enlarger
   — finishing

Module Ten. **Color Photography**

1. Safety
2. Color Photography
   — composition
   — lighting
   — lenses
   — slide copying
   — film developing
   — color enlarger
   — print mounting

Module Eleven. **Mechanical Drafting**

1. Drafting
   — freehand drawing
   — lines, letters, symbols
   — tools

— orthographic projection
— isometric projection
— perspective
— dimensioning — lettering

Module Twelve. **Customer Service**

1. Safety
2. Customer Service
   — job analysis
   — personnel organization
   — production
   — monitoring

Module Thirteen. **Offset Printing Production**

1. The Journalism Process
   — preparation of reports and advertising
   — production techniques
   — appropriate layouts for specific jobs
   — offset camera applications
   — offset reproduction
   — binding

E. General Modules

Introduction

The three modules described may be used once by a student to augment any one of the four major fields of study.

1. **Research**

   The purpose of the research module is to allow individual students to engage in an in-depth study of a problem related to any of the career fields.

   The module provides for individualizing the program to allow for special interests of students. The student should prepare a proposal of his/her research and have it approved by the teacher. The proposal should contain:

   (a) A statement of the problem.

   (b) The procedure to be followed in the research of the problem.

   (c) A list of the materials and lab facilities to be used.

   (d) A time line of activities.

   The time period is 25 hours and qualifies as a regular module.

2. **Developmental**

   The purpose of the developmental module is to provide a 25-hour block of time for the teacher to try out new content with his/her class. The content of the proposal or project should be discussed with the Associate Director of Curriculum for the Practical Arts.

3. **Production Science**

   The purpose of the production science module is to provide for a class project in setting up a company to produce a product or service.

   The teacher may select content from the Production Science 30 curriculum guide to develop a 25-hour module.

INDUSTRIAL EDUCATION 12, 22, 32 PROGRAMS

Introduction

The Industrial Education 12, 22, 32 program is a series of modules which develop competencies leading to seven different career fields.

Entry into a career field may be gained by taking one of several introductory courses. These are:

1. the "12" course designated for each major, or
2. two modules from the Industrial Education 10, 20, 30 series related to the anticipated major, or
3. one half of a 12 course. The other half would be another half 12 or a module from the 10 program. The course would be recorded as Industrial Education 10.

Following the introductory course the student may advance to the major area of study by selecting any number of five-credit modules from the courses designated as "22" or "32". The scheduling and sequencing of the modules is the responsibility of the local school personnel but must be in accordance with the regulations pertaining to prerequisites.

A student registered in a second or third level course (22 or 32) is regarded as taking a major in that course area. Having established a major the student may select courses designated as minors and in this way broaden his/her practical skill base in a career field or even several career fields. However, students must complete all the preceding modules in a major series (usually six) before taking the 32C module (exception: Beauty Culture).

Automotives

Mechanics 12 (5 credits)

Introduction

Mechanics 12 is an introductory course leading to all the major areas in the career field of mechanics. The student is introduced to power sources and methods of transmission. The student studies the construction and operation of machines, particularly the motor vehicle, and engages in the activities of testing, disassembly and assembly of machines, reading, researching and applying information learned to analyzing and repairing minor machine problems.

Objectives

The specific objectives of the Mechanics 12 course are:

1. To enable the student to understand the use, care and control of the power machine.
2. To allow the student to gain an insight into the construction and operation of machines which convert energy to useful work.
3. To provide the student with realistic experiences so that he/she is better able to make a career choice based on accurate information.
4. To help the student understand the many basic laws and principles of science at work in mechanics, and relate these laws and principles to the vast area of power technology.

Prescribed Learning Resource

Thiessen, F. and Dales, Davis. *Automotive Principles and Service,* Prentice Hall, 1981.

Content

1. Career Field Study
2. Safety
3. Shop Practices
4. Automobile Care and Ownership
5. Power Sources
6. Engine Support Systems
7. Transmission of Power

Automotives 22A (5 Credits)

Introduction

Automotives 22A may be selected after completion of Mechanics 12 or Industrial Education 10.

The control of an automobile is dependent on the running gear and all its components. This module of study provides an introduction to brakes, steering and suspension.

Objectives

The objectives of the Automotives 22A module are:

1. To expose the student, by direct involvement and reference book description, to those components of the automobile that are concerned with control characteristics such as steering, suspension and braking.
2. To let the student employ measuring and correction tools, and manufacturers' recommendations and specifications to assist in the diagnosis and elimination of problems.
3. To make the student constantly practice safety procedures while working with machines.
4. To demand of the student absolute cleanliness in the maintenance of the automobile parts, tools and facilities.
5. To leave the student with a sense of achievement and pride that will motivate self-improvement in the skills of diagnosis and correction of problems in automobile maintenance.

Prescribed Learning Resource

Thiessen, F. and Dales, Davis. *Automotive Principles and Service*, Prentice Hall, 1981.

Content

1. Suspension
   — stability and control
   — wheel and tire assembly
   — steering gear
2. Steering Geometry
   — alignment
   — problem diagnosis
3. Brakes
   — types
   — power assist brakes
   — brake principle
   — maintenance and repair

Automotives 22B (5 credits)

Introduction

Automotives 22B may be selected after completion of Mechanics 12 or Industrial Education 10.

Objectives

The objectives of the Automotives 22B module are:

1. To develop in the student the attitudes and skills required of a motor mechanic.
2. To familiarize the student with automotive power trains and thus relate theoretical background to that of repair.
3. To develop in the student the habits of critical thinking in the analysis of power train problems.
4. To acquaint the student with manufacturers' manuals and a variety of technical publications and to acquire practice in their use.
5. To provide the student with a basis for further study into power trains.

Prescribed Learning Resource

Thiessen, F. and Dales, Davis. *Automotive Principles and Service.* Prentice Hall, 1981.

Content

1. Power Train Components and Service
   - — clutch
   - — transmissions
   - — drive lines and universal joints
   - — rear axle assembly
   - — principles of differential gear adjustments
   - — disassembly, inspection and assembly of differential
   - — trans axles
   - — axles
   - — independent rear suspension

Automotives 22C (5 credits)

Introduction

The Automotives 22C module may be taken at any time following completion of Mechanics 12 or Industrial Education 10.

Objectives

The objectives of the Automotives 22C module are:

1. To provide the student with experiences which will relate previously mastered theories to modern mechanical developments.
2. To provide the student with experiences which will provide a basis for further research in the development of the automotive electrical systems.
3. To provide the student with experiences which can be related to other mechanics and electrical fields.

Prescribed Learning Resource

Thiessen, F. and Dales, Davis. *Automotive Principles and Service.* Prentice Hall, 1981.

Content

1. Electricity and Magnetism
   — control of electrical power
2. Sources of Electrical Energy; Battery
3. Sources of Electrical Energy; Generator/Alternator
   — component identification
4. Application of Electricity to the Automobile
   — starting system
   — ignition system
5. Oxy-Acetylene Heating and Cutting

Automotives 32A (5 credits)

Introduction

Automotives 32A may be selected at any time after the student has completed Automotives 22A. The module introduces the student to fuels, test equipment, and the techniques used in tuning the engine.

Objectives

The objectives of the Automotives 32A module are:

1. To provide the student with a basis for further study into fuel and tune-up.
2. To demand of the student absolute cleanliness in the maintenance of automobile parts, tools, and facilities.
3. To leave the student with a sense of achievement and pride that will motivate self-improvement in the skills of diagnosis and correction of problems in automobile maintenance.

Prescribed Learning Resources

Thiessen, F. and Dales, Davis. *Automotive Principles and Service.* Prentice Hall, 1981.

Crowse, W.H. *Automotive Mechanics.* McGraw-Hill Ryerson.

Content

1. Fuel System
   — types of fuels
   — fuel system components
2. Tune-up
   — test equipment
   — operational sequence for tune-up
   — checking other systems of the automobile that relate to tune-up
3. Exhaust and Emission Control Systems

Automotives 32B (5 credits)

Introduction

The Automotives 32B module may be taken at any time following the completion of Automotives 22A.

Objectives

The objectives of the Automotives 32B module are:

1. To develop in the student some of the attitudes and skills required of a motor mechanic.
2. To familiarize the student with automotive engines, and thus relate his/her theoretical background to engine repair.
3. To develop in the student the habits of critical thinking in the analysis of engine problems.
4. To accustom the student to utilize manufacturers' manuals and a variety of technical publications.
5. To provide the student with a basis for further study into power systems at a more advanced level.

Prescribed Learning Resources

Thiessen, F. and Dales, Davis. *Automotive Principles and Service.* Prentice Hall, 1981.

Crowse, W.H. *Automotive Mechanics.* McGraw-Hill Ryerson.

Content

1. The Internal Combustion Engine
   — construction and operation
2. The Maintenance and Repair of the Internal Combustion Engine
   — disassembly procedure
   — engine assembly
   — tune-up
   — sequence of operations
3. Engine Support Systems
   — cooling
   — lubrication

Automotives 32C (5, 10 credits)

The last module of the automotives sequence is open to students who have completed 30 credits or six modules in the major.

The instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously. Individual students, groups of students or whole classes may elect to study an area in more detail to develop more skills. This in-depth study could be in power systems, tune-up, or any of the modules named in the automotives sequence

or

(b) Engage in actual garage work through a program coordinated by the automotives teacher and under a journeyman mechanic on the job.

Auto Body

Auto Body 12 (5 credits)

Introduction

Auto Body 12 introduces the student to the auto body trade. It is a general course giving an overview of the total area with minimal time for skill development.

Objectives

The purposes of Auto Body 12 are:

1. To give the student an understanding of the auto body trade and related occupations.
2. To introduce the student to the safe use of tools and acceptable procedures basic to the trade.

Prescribed Learning Resources

Hogg. *Auto Body Repair and Refinishing*. McGraw Hill Ryerson.

Deroche & Hildebrand. *The Principles of Auto Body Repairing and Refinishing*. Prentice-Hall.

Content

1. Career Field Occupations
   — employment opportunities
2. Introduction to Auto Body
   — body components
   — tools and equipment
   — interior and exterior car care
3. Safety
4. Shop Operation
   — procedures, clean-up
5. Oxy-acetylene Welding
   — equipment and procedures
6. Metal Finishing
   — tools, materials and processes
7. Painting
   — surface preparation
   — paint application

Auto Body 22A (5 credits)

Introduction

This course is open to any student who has completed Auto Body 12 or Industrial Education 10. Students will have an opportunity to use the tools and materials of the trade and begin developing an idea of the standards of skills required.

Objectives

The objectives of Auto Body 22A are:

1. To give the student an opportunity to learn trade terminology.
2. To give the student an opportunity to learn the applications of various tools and skill in using them.

Prescribed Learning Resources

Hogg. *Auto Body Repair and Refinishing*.

Deroche & Hildebrand. *The Principles of Auto Body Repairing and Refinishing*.

Content

1. Shop Operation
   — trade terminology
   — tools
   — shop design
2. Auto Body Welding
   — metals
3. Metal Finishing
   — specialized treatment
   — use of heat
   — filling metal
   — painting
4. Trim and Hardware
   — interior trim
   — hinges

Auto Body 22B (5 credits)

Introduction

Students may register in Auto Body 22B following completion of Auto Body 22A.

Objectives

The objectives of Auto Body 22B are:

1. To give the student an opportunity to develop skills in shaping auto body parts.
2. To give the student an opportunity to develop and practise skills in auto body welding.

Prescribed Learning Resources

Hogg. *Auto Body Repair and Refinishing.*

Deroche & Hildebrand. *The Principles of Auto Body Repairing and Refinishing.*

Content

1. Auto Body Construction
   — body component shaping
   — assembly
2. Alignment Theory and Application
   — methods of alignment
3. Auto Body Welding
   — oxy-acetylene welding
   — joints
4. Door Repair

Auto Body 22C (5 credits)

Introduction

Students must have completed Auto Body 22B before registering in this course.

Objectives

The objectives of Auto Body 22C are:

1. To give the student an opportunity to learn about the management component of a business.
2. To give the student practice in the repair function of the auto body trade.

Prescribed Learning Resources

Hogg. *Auto Body Repair and Refinishing.*

Deroche and Hildebrand. *The Principles of Auto Body Repairing and Refinishing.*

Content

1. Management in the Auto Body Trade
2. Automotive Plastics
   — identification and repair
3. Bumper Repair
4. Skill Development for Vehicle Repair
   — aligning
   — welding
   — finishing
   — filling
   — painting

Auto Body 32A (5 credits)

Introduction

This module introduces the student to estimating the cost of repairs and further develops his/her skills in finishing and painting.

Objectives

The objectives of Auto Body 32A are:

1. To give the student an opportunity to learn how to estimate the cost of repair work.
2. To give time for practice to develop skills.

Prescribed Learning Resources

Hogg. *Auto Body Repair and Refinishing.*

Deroche & Hildebrand. *The Principles of Auto Body Repairing and Refinishing.*

Content

1. Estimating Auto Body Damage
2. Painting Equipment and the Spray Booth
3. Auto Body Alignment
   — shaping and aligning components — doors, trunk lid, decks, glass
4. Metal Finishing
   — picking and filling
   — filling — metal and plastic
   — abrasives
5. Live Repairs

Auto Body 32B (5 credits)

Introduction

This module expands on previously learned skills and introduces auxiliary systems such as electrical wiring.

Objective

The objective of Auto Body 32B is to give the student an opportunity to enhance his/her skills through practice by doing a job from estimating to counting up the final bill.

Prescribed Learning Resources

Hogg. *Auto Body Repair and Refinishing.*

Deroche & Hildebrand. *The Principles of Auto Body Repairing and Refinishing.*

Content

1. Auto Body Electrical
   — circuits
   — headlight aiming
2. Painting
3. Frames and Alignment
   — frame straighteners
   — wheel alignment
4. Welding
   — braze welding
   — MIG welding
5. Interior Repair
   — glass installation
   — care and cleaning

Auto Body 32C (5, 10 credits)

Introduction

This last module in auto body is open to students who have completed 30 credits in the subject.

Objectives

The 125 or 250 hours of time available in this module may be used to:

(a) Provide more time to practise skills in content taken previously. Individual students, groups of students or the whole class may elect to study an area in depth. This could be the use of plastics in automotives, aligning, painting or any of the content areas covered in the auto body sequence.

(b) Engage in actual construction work supervised by the auto body teacher or work study coordinator and a journeyman on the job.

(c) Further preparation for students planning to enter apprenticeship.

Related Mechanics

Mechanics 12 (5 credits)

Introduction

Mechanics 12 is an introductory course for related mechanics leading to all the major areas in the career field of mechanics. The student is introduced to power sources and methods of transmission. The student studies the construction and operation of machines, particularly the motor vehicle, and engages in the activities of testing, disassembly and assembly of machines, reading, research and applying information learned to analyzing and repairing minor machine problems.

Objectives

The specific objectives of the Mechanics 12 course are:

1. To enable the student to understand the use, care and control of the power machine.
2. To allow the student to gain an insight into the construction and operation of machines which convert energy to useful work.
3. To provide the student with realistic experiences so that he/she is better able to make a career choice based on accurate information.
4. To help the student understand the many basic laws and principles of science at work in mechanics, and relate these laws and principles to the vast area of power technology.

Prescribed Learning Resources

Crouse, W.H. *Automotive Mechanics,* SI Edition. McGraw-Hill Ryerson, 1980.

Thiessen, F. and Dales, Davis. *Automotive Principles and Service.* Prentice Hall, 1981.

Content

1. Career Field Study
2. Safety
3. Shop Practices
   — hand tools
   — measuring instruments
   — fasteners
   — specialized equipment
   — repair manuals and specifications
4. Automobile Care and Ownership
5. Power Sources
   — types of engines
   — methods of piston engine classification
   — piston engine terms
   — engine construction and operation
6. Engine Support Systems
   — fuel system
   — exhaust system
   — cooling system
   — lubricating system
   — electrical system
7. Transmission of Power

Related Mechanics 22A (5 credits)

(Power System)

Introduction

The Related Mechanics 22A module may be taken at any time following the completion of Mechanics 12.

Objectives

The objectives of the Related Mechanics 22A module are:

1. To develop in the student some of the attitudes and skills required of a motor mechanic.
2. To familiarize the student with automotive engines, and thus relate his/her theoretical background to engine repair.
3. To develop in the student the habits of critical thinking in the analysis of engine problems.
4. To accustom the student to utilize manufacturers' manuals and a variety of technical publications.
5. To provide the student with a basis for further study into power systems at a more advanced level.

Prescribed Learning Resources

Crouse, W.H. *Automotive Mechanics.* SI Metric Edition, McGraw-Hill Ryerson, 1980.

Thiessen, F. and Dales, Davis. *Automotive Principles and Service.* Prentice Hall, 1981.

Content

1. The Internal Combustion Engine
   — construction and operation
2. The Maintenance and Repair of the Internal Combustion Engine
   — disassembly procedure
   — engine assembly
   — tune-up
   — sequence of operations
3. Engine Support Systems
   — cooling
   — lubrication

Related Mechanics 22B (5 credits)

(Framing — Residential)

Introduction

This course is open to any student who has completed Industrial Education 10 or Related Mechanics 12.

Objectives

The objectives of the Related Mechanics 22B module are:

1. To give the student practical experience in house framing.
2. To give the student a basic knowledge of various types of framing and layout procedures in accordance with the codes regulating construction.

3. To give the student practical experience in material quantity and cost estimating.

Prescribed Learning Resource

Miller, H.G. *Building Construction-Materials and Methods.* Macmillan of Canada. Toronto: (Gage Publishing Ltd.).

Content

1. Floor Support and Framing Systems
   - — wood foundations
   - — built-up beams, girders and columns
   - — floor joist systems
   - — bracing
   - — floor sheathing
   - — quantity and cost survey
2. Wall Framing
   - — basic framing systems
   - — platform framing
   - — wall sheathing
3. Ceiling and Roof Framing
   - — ceiling framing
   - — roof framing
   - — cornice work
   - — roof sheathing

Related Mechanics 22C (5 credits)

(Residential Wiring)

Introduction

Related Mechanics 22C introduces the student to basic residential wiring. The introductory course Industrial Education 10 or Mechanics 12 are prerequisite.

Objectives

The objectives of the Related Mechanics 22C module are:

1. To introduce the student to concepts of electrical wiring in the home.
2. To allow the student to develop skill in the use of tools, equipment, and instruments peculiar to the electrical field.
3. To familiarize the student with electrical codes and their application.

Prescribed Learning Resources

Canadian Electrical Code. Current or latest approved edition. C.S.A.

Clidero & Sharpe. *Applications of Electrical Construction,* 2nd Edition. General Publishing.

Content

1. Career Opportunities
2. Safety
3. Residential Wiring Installations
   - — planning
   - — installation
   - — re-wiring

4. Management Practices
   — organization
   — bidding for work
   — employee concerns

Related Mechanics 32A

(Benchwork and Lathe Operations)

Introduction

Related Mechanics 32A is designed to provide the student with theory and practice in: safety, machine maintenance, blueprint reading, layout and measurement, benchwork, machine tools, basic metallurgy and occupational information.

Objectives

The objectives of the Related Mechanics 32A module are:

1. To provide the student with basic machine shop orientation and safety instruction.
2. To teach the student basic skills in machine lubrication and maintenance.
3. To provide the student with an opportunity to perform practical operations using hand tools and machine tools.
4. To give the student career and occupational information.

Prescribed Learning Resource

Krar, S.F. & St. Amand J.E. *Machine Shop Training,* 3rd Edition. McGraw-Hill Ryerson, 1977.

Content

1. Safety Consciousness
2. General Machine Shop Maintenance
   — machine lubrication
   — machine tool maintenance and repair
   — proper use and care of all tools and equipment
3. Blueprint Reading
   — object visualization and drawing interpretation
4. Layout and Measurement
5. Benchwork
   — hand tools
6. Machine Tools
   — material removal by machining
7. Metallurgy
8. Metal Working Occupations
   — career opportunities

Related Mechanics 32B (5 credits)

(Introductory Welding)

Introduction

Related Mechanics 32B (Introductory Welding) provides the opportunity

for the student to explore the subject of welding and develop introductory level skills.

Objectives

The objectives of the Related Mechanics 32B module are:

1. To give the student an understanding of the role of the welder in industrial society.
2. To introduce the student to the safe use of tools and acceptable procedures basic to the welding trade.

Prescribed Learning Resource

Pender, J.A. *Welding*. McGraw-Hill Ryerson, 1978. (Student guide and teacher key also available.)

Content

1. Introduction to Welding
2. Safety
3. Fusion Welding
   - — oxy-acetylene equipment
   - — setting up new equipment
   - — gas pressure and flame adjustments
   - — shop practices
   - — arc-welding, basic process
4. Thermal Separation
5. Measurement, Tools and Shop Equipment
6. Braze Welding and Soldering
7. Fabrication and Repair

A developmental module, approved by the Associate Director of Curriculum for the Practical Arts, may replace any of the following modules: Related Mechanics 22A, 22B, 22C, 32A, or 32B.

Related Mechanics 32C (5, 10 credits)

Content

Advanced study may be continued in any of the topics covered in the courses listed under related mechanics or on the job training under the supervision of the related mechanics teacher and a journeyman on the job.

Building Construction

Building Construction 12 (5 credits)

Introduction

This module is to be very broad in nature: a high level of skill development will not be expected.

Objectives

The purpose of Building Construction 12 is:

1. To give the student an understanding of the building construction field and related occupations.

2. To introduce the student to the safe use of tools and acceptable procedures basic to the field of construction.

Prescribed Learning Resource

Miller, H.G. *Hand and Machine Woodwork,* Metric Edition. Macmillan of Canada. Toronto: (Gage Publishing Ltd.).

Content

1. Tool Processes Used in Measuring and Layout
   — measuring and layout tools
2. Safety
3. Shaping Materials
   — removal
   — combining
   — forming
4. Tool Maintenance
5. Applied Mathematics and Measurement
   — trade mathematics
   — measurement systems (English, metric)
6. Planning and Design
7. Materials
   — wood
   — glue
   — wood finishes
8. Career Field Study
   — occupations
   — employment opportunities

Building Construction 22A (5 credits)

(Cabinet and Furniture Making)

Introduction

This course is open to any student having completed one of Building Construction 12, or Industrial Education 10. Students have the opportunity to use tools and materials which challenge them to high standards of workmanship in the production of cabinets and furniture.

Objective

The purpose of Building Construction 22A is to introduce the student to basic design, materials and construction of cabinet work.

Prescribed Learning Resource

Miller, H.G. *Building Construction — Materials and Methods.* Revised Metric Edition. Macmillan of Canada. Toronto: (Gage Publishing Ltd.).

Content

1. Introduction to Cabinet and Furniture Making
   — design
   — material
   — processes
   — tools

2. Basics of Cabinetmaking
   — joints assembly
3. Finishing
   — reasons for finishing
4. Design
   — function
   — appearance

Building Construction 22B (5 credits)

(Concrete and Form Building)

Introduction

Students may register in Building Construction 22B following completion of one of Building Construction 12, or Industrial Education 10.

Objectives

The objectives of Building Construction 22B are:

1. To give the student practical experience in basic surveying for building layout.
2. To give the student practice in constructing concrete forms.
3. To give the student the opportunity to learn the properties of concrete, and how to mix and place it.
4. To give the student practice in quantity survey methods.

Prescribed Learning Resource

Miller, H.G. *Building Construction — Materials and Methods.* Metric Edition. Macmillan of Canada. Toronto: (Gage Publishing Ltd.).

Content

1. Principles of Laying Out Building Lines
   — legal description
   — reference points, soils and excavations
   — measurement of quantities
2. Introduction to Concrete Form Construction
   — foundations and footings
   — design of forms
   — measurement of quantities
3. Form Construction, Measurement of Quantities
4. Principles and Practices of Making Concrete
   — definition of concrete
   — materials used
   — proportions
   — testing
   — estimating

Building Construction 22C (5 credits)

(Framing - Residential)

Introduction

This course is open to any student who has completed any one of Building Construction 12, or Industrial Education 10.

Objectives

1. To give the student practical experience in house framing.
2. To give the student a basic knowledge of various types of framing and layout procedures in accordance with the codes regulating construction.
3. To give the student practical experience in material quantity and cost estimating.

Prescribed Learning Resource

Miller, H.G. *Building Construction — Materials and Methods.* Macmillan of Canada. Toronto: (Gage Publishing Ltd.).

Content

1. Floor Support and Framing Systems
   - — wood foundations
   - — built-up beams, girders and columns
   - — floor joist systems
   - — bracing
   - — floor sheathing
   - — quantity and cost survey
2. Wall Framing
   - — basic framing systems
   - — platform framing
   - — wall sheathing
   - — quantity and cost survey
3. Ceiling and Roof Framing
   - — ceiling framing
   - — roof framing
   - — cornice work
   - — roof sheathing
   - — special ceiling and roof framing systems

Building Construction 32A (5 credits)

(Exterior Finishing)

Introduction

This module aims primarily at introducing the student to exterior finishing in residential construction. Although blueprint reading, drawing and sketching has been dealt with in other modules, it should be pursued in greater depth in this module. Students may register in Building Construction 32A following completion of one of Building Construction 12, or Industrial Education 10.

Emphasis should be placed on student activity through on-site projects or mock-ups.

Objectives

The purpose of Building Construction 32A is:

1. To give the student experience in understanding working drawings and sketching.
2. To develop an understanding of the influences of materials and design on exterior finishing.
3. To develop an awareness of materials, tools, and procedures used in completing the exterior of a house.

Prescribed Learning Resource

Miller, H.G. *Building Construction — Materials and Methods.* Metric Edition, Macmillan of Canada. Toronto: (Gage Publishing Ltd.).

Content

1. Introduction to Exterior Finishing
2. Blueprint Reading, Architectural Drawing, and Sketching
3. Safety
4. Roof Coverings
5. Cornice and Eave Projection
6. Exterior Doors and Windows
7. Exterior Wall Coverings
8. Exterior Trim
9. Pictorial Drawing

Building Construction 32B (5 credits)

(Interior Finishing)

Introduction

This course is open to any student who has completed one of Building Construction 12 or Industrial Education 10. It is recommended that students also have a minimum of one of the second level courses (22).

Objectives

The purpose of Building Construction 32B is:

1. To give the student practical experiences with materials, special tools and trade procedures employed in interior finishing.
2. To introduce the student to the principles of insulation, vapor barrier, ventilation and energy conservation.
3. To give the student a basic understanding of construction management and related trades.
4. To give the student a basic understanding of stair construction.
5. To give the student a basic understanding of construction and installation of interior doors.
6. To give the student a basic understanding of construction and installation of cabinets, vanities and closets.
7. To give the student a basic understanding of how to apply protective and decorative coatings.

Prescribed Learning Resource

Miller, H.G. *Building Construction — Materials and Methods.* Macmillan of Canada. Toronto: (Gage Publishing Ltd.).

Content

1. Management and Related Trades
   — project costs and bids
2. Insulation, Vapor Barrier, Ventilation
   — energy efficiency

3. Interior Walls, Ceilings, Floors, Trim
4. Stair Construction
5. Interior Doors
   — types and accessories
   — fabrication and installation
6. Cabinets, Vanities and Closets
7. Protective and Decorative Coatings

Building Construction 32C (5, 10 credits)

Introduction

This last module in the building construction major is open to students who have completed 30 credits **or** six modules in the major.

The instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously. Individual students, groups of students or the whole class may elect to study an area in depth. This could be cabinetmaking, framing (commercial or residential), concrete work or any of the modules named in the building construction sequence.

(b) Engage in actual construction work supervised by the building construction teacher as a work experience coordinator and a journeyman on the job.

(c) Further preparation for students planning to enter apprenticeship.

Machine Shop

Machine Shop 12 (5 credits)

(Benchwork and Lathe Operations)

Introduction

Machine Shop 12 is designed to provide the student with theory and practice in: safety, machine maintenance, blueprint reading, layout and measurement, benchwork, machine tools, basic metallurgy and occupational information.

Objectives

The objectives of Machine Shop 12 are:

1. To provide the student with basic machine shop orientation and safety instruction.
2. To teach the student basic skills in machine lubrication and maintenance.
3. To provide the student with an opportunity to perform practical operations using hand tools and machine tools.
4. To give the student career and occupational information.

Prescribed Learning Resource

Krar, S.F. & St. Amand J.E. *Machine Shop Training*. 3rd Edition. McGraw-Hill Ryerson, 1977.

Content

1. Safety Consciousness
   — unsafe acts and conditions
2. General Machine Shop Maintenance
   — machine lubrication
   — machine tool maintenance and repair
   — proper use and care of all tools and equipment
3. Blueprint Reading
   — object visualization and drawing interpretation
4. Layout and Measurement
   — measuring
   — layout
5. Benchwork
   — hand tools
6. Machine Tools
   — material removal by machining
7. Metallurgy
   — steel
8. Metalworking Occupations
   — career opportunities

Machine Shop 22A (5 credits)

Introduction

Machine Shop 22A is designed to provide further skill training in basic machine shop theory and practice. A student can take Machine Shop 22A following the introductory courses, Industrial Education 10 or Machine Shop 12.

Objectives

The objectives of Machine Shop 22A are:

1. To provide an opportunity for the student to identify conditions relevant to machine operations and surrounding areas that could lead to injuries.
2. To provide the student with an activity of technical drawing interpretation as it relates to machine shop.
3. To give the student hands-on experience in hand and machine operations commonly performed in a machine shop.

Prescribed Learning Resource

Krar, S.F., Oswald, J.W., St. Amand, J.E. *Technology of Machine Tools.* 2nd Edition. McGraw-Hill Ryerson. 1976.

Content

1. Safety and Health Hazards
2. General Machine Shop Maintenance
3. Blueprint Reading and Sketching
4. Benchwork
5. Metallurgy
6. Lathes

7. Large Drill Press
8. Power Saws
9. Shapers (optional)
10. Milling Machines (introductory)
11. Career Planning

Machine Shop 22B (5 credits)

(Lathe, Milling and Grinding Operations)

Introduction

Machine Shop 22B continues from the experience of the 22A module with theory and practice in advanced lathe work, the introduction of the milling operation and surface grinding operations.

Objectives

The objectives of Machine Shop 22B are:

1. To continue the emphasis of safe working conditions and working habits.
2. To provide increased skills in lathe work.
3. To provide basic milling theory and practice.
4. To introduce the student to various grinding procedures.

Prescribed Learning Resource

Krar, S.F., Oswald, J.W., St. Amand, J.E. *Technology of Machine Tools.* 2nd Edition. McGraw-Hill Ryerson, 1976.

Content

1. Safety and Health Hazards
2. General Machine Shop Maintenance
   — machine tool maintenance and repair
   — machine lubrication
3. Blueprint Reading, Sketching and Estimating
   — interpretation of drawings
   — sketching
   — estimating
4. Metallurgy
5. Lathes
6. Milling Machines
   — horizontal milling
   — vertical milling
7. Surface Grinding Machines
   — grinding operations
8. Fasteners
9. Broaching
10. Mating Parts

Machine Shop 22C (5 credits)

(Advanced Machining)

Introduction

In Machine Shop 22C the content and practice advance to precision measuring and machining. Continued emphasis is placed on safety and machine maintenance. More advanced technical drawing interpretation leads to theory on metallurgy and metal cutting, and practice in advanced machining operations.

Objectives

The objectives of Machine Shop 22C are:

1. To reinforce the need for equipment maintenance and safety.
2. To provide for interpretation of more advanced technical drawings.
3. To provide information on cutting tool shape, chip formation and tool life.
4. To provide experience in advanced machining operations.

Prescribed Learning Resource

Krar, S.F., Oswald, J.W., St. Amand, J.E. *Technology of Machine Tools.* 2nd Edition. McGraw-Hill Ryerson, 1976.

Content

1. Safety and Shop Regulations
2. General Machine Shop Maintenance
   — proper use and care of all tools and equipment
3. Blueprint Reading, Sketching and Design
   — sketching techniques
4. Metallurgy
   — steel and its alloys
   — metal finishes
5. Physics of Metal Cutting
   — chip formation
   — cutting tool geometry
   — tool life and the effect of temperature and friction
   — cutting fluids
6. Milling Machines
   — horizontal and vertical milling operations
7. Grinding Machines
   — grinding machine operations

Machine Shop 32A (5 credits)

(Construction and Fabrication)

Introduction

Machine Shop 32A is an advanced module requiring an understanding and an ability to practise the required basic operations in a machine shop. Besides the reinforcement of the basics this module concentrates on non-ferrous metals, forms of materials, advanced turning operations, horizontal and vertical milling and grinding.

Objectives

The objectives of Machine Shop 32A are:

1. To reinforce the basics in machine shop theory and practice.
2. To introduce the student to properties and operations of non-ferrous metals.
3. To provide for advanced experience in milling.
4. To provide career information.

Prescribed Learning Resource

Krar, S.F., Oswald, J.W., St. Amand, J.E. *Technology of Machine Tools.* 2nd Edition, McGraw-Hill Ryerson, 1976.

Content

1. Safety and Shop Regulations
2. General Machine Shop Maintenance
3. Blueprint Reading and Sketching
4. Metallurgy (non-ferrous)
5. Materials in Different Forms
   — identification of stock forms
6. Lathes — Advanced
7. Advanced Milling Machine (optional)
   — horizontal milling
   — vertical milling
8. Grinding Machines

Machine Shop 32B (5 credits)

(Advanced Machinery Operations)

Introduction

Machine Shop 32B provides the student with an orientation to surface finishing, welding specifications and symbols. The student gets experience in using machinery's handbook to solve various trade problems, and learns the theory and practice of such concepts as heat treating, jigs and fixtures, special machine operations and patents.

Objectives

The objectives of Machine Shop 32B are:

1. To reinforce desirable working habits and working conditions.
2. To introduce the student to the interpretation and use of technical specifications and other data.
3. To present to the student the theory and practice of the concept of heat treating.
4. To introduce the student to special machine operations.

Prescribed Learning Resource

Krar, Oswald, St. Amand. *Technology of Machine Tools.* 2nd Edition. McGraw-Hill Ryerson, 1976.

Content

1. Safety and Health Hazards
2. General Machine Shop Maintenance
   — proper use and care of equipment
3. Blueprint Reading, Sketching and Estimating
4. Metallurgy
   — heat treating
   — acetylene welding
5. Jigs and Fixtures
   — jigs
   — fixtures
6. Bearings Machine Shop
7. Lathe (advanced)
8. Advanced Milling Machine (optional)
9. Grinding Machines
   — grinding machine operations
10. Special Machine Processes (optional)
11. Patents
    — patents
12. Career Opportunities
    — career field occupations
    — employment opportunities

Machine Shop 32C (5, 10 credits)

Introduction

This last module in the machine shop major is open to students who have completed 30 credits or six modules in the major.

The 125 hours of instruction time available in this module may be used to:

(a) Provide greater depth for a module taken previously. Individual students, groups of students or whole classes may elect to study an area in depth. This could be more lathe work, metallurgy, other machining or any of the modules named in the machine shop sequence

or

(b) Engage in actual machining work supervised by the machine shop teacher or work study coordinator and a journeyman on the job.

Sheet Metal

Sheet Metal 12 (5 credits)

Introduction

The general objective of this course is to offer the student a sampling of the type of work to be found in the career area, and thus give the student the knowledge necessary to make an informed decision about future studies.

Objectives

The objectives of the Sheet Metal 12 course are:

1. To give the student an understanding of the sheet metal worker's role in industrial society.
2. To introduce the student to the safe use of tools and acceptable procedures basic to the sheet metal trade.

Prescribed Learning Resources

Zinngrabe, C.J. and Schumacher, F.W. *Practical Layout for the Sheet Metal Shop.* Delmar Publishers. Latest Edition.

Zinngrabe, C.J. and Schumacher, F.W. *Sheet Metal Hand Processes.* Delmar Publishers, 1974.

Zinngrabe, C.J. and Schumacher, F.W. *Sheet Metal Machine Processes.* Delmar Publishers, 1975.

Content

1. Career Field Occupations
   — related occupations
   — employment opportunities
   — trade certification
2. Safety
3. Industrial Forces
   — social structure of industry
   — collective bargaining
   — apprenticeship
4. Measurement
   — systems; metric, imperial
   — measuring instruments
   — layout instruments
5. Tool Processes
   — mechanical removal of metal
   — thermal removal
   — chemical removal
   — combining material; fastening methods
   — forming
6. Elements of Pattern Development
   — simple pattern development
   — parallel line development
   — radial line development

Sheet Metal 22A (5 credits)

(Pattern Development)

Introduction

Students may advance to Sheet Metal 22A following completion of an introductory course in Industrial Education 10 or Sheet Metal 12. Sheet Metal 22A is prerequisite for 22B.

Objective

The objective of the Sheet Metal 22A module is to introduce the student to the principles of pattern development.

Prescribed Learning Resource

Daugherty, Powell. *Sheet Metal Pattern Drafting and Shop Problems.* Chas. A. Bennett Co. Inc., 1975.

Content

1. Principles of Sheet Metal Layout
   — simple pattern development
   — parallel line development
   — radial line development
   — triangulation

Sheet Metal 22B (5 credits)

(Joining)

Introduction

Students may advance to Sheet Metal 22B or take it concurrently with 22A.

Objective

The objective of the Sheet Metal 22B module is to introduce the student to the basic methods of joining and fastening sheet metal products.

Prescribed Learning Resource

Daugherty, Powell. *Sheet Metal Pattern Drafting and Shop Problems.* Chas. A. Bennett Co. Inc., 1975.

Content

1. Joining Sheet Metal
   — mechanical methods of joining
   — self locking seams
   — adhesion
   — cohesion

Sheet Metal 22C (5 credits)

(General)

Introduction

Students may advance to Sheet Metal 22C following completion of or concurrently with 22B.

Objective

The objective of the Sheet Metal 22C module is to introduce the student to methods of constructing and fabricating sheet metal products.

Prescribed Learning Resource

Daugherty, Powell. *Sheet Metal Pattern Drafting and Shop Problems.* Chas. A. Bennett Co. Inc., 1975.

Content

1. General Sheet Metal Work
   — tools and equipment
   — rectangular objects
   — conical objects

Sheet Metal 32A (5 credits)

(Heating and Air Conditioning)

Introduction

Students must have completed the "22" series before advancing to 32A.

Objectives

The objectives of the Sheet Metal 32A module are:

1. To introduce the student to the fundamentals of heating.
2. To introduce the student to the fundamentals of air-conditioning.

Prescribed Learning Resource

Daugherty, Powell. *Sheet Metal Pattern Drafting and Shop Problems.* Chas. A. Bennett Co. Inc., 1975.

Content

1. Heating and Air-Conditioning
   — air-conditioning systems; types, installations, controls
   — heating systems; fittings, installations, controls
   — new developments; solar systems, high efficiency furnaces

Sheet Metal 32B (5 credits)

(Cabinet)

Introduction

Students may advance to Sheet Metal 32B after completion of the "22" series.

Objective

The objective of the Sheet Metal 32B module is to introduce the student to cabinet work related to the sheet metal trade.

Prescribed Learning Resource

Daugherty, Powell. *Sheet Metal Pattern Drafting and Shop Problems.* Chas. A. Bennett Co. Inc., 1975.

Content

1. Introduction to Sheet Metal Cabinet Work
   — hospital equipment
   — restaurant equipment
   — general cabinet work
   — lay out and manufacture one cabinet type project

Sheet Metal 32C (5, 10 credits)

The last module of the sheet metal sequence is open to students who have completed 30 credits or six modules in the major.

The 125 hours of instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously. An individual student, groups of students or whole classes may elect to study an area in more detail. This in-depth study could be in pattern development, air conditioning, heating or any of the modules named in the sheet metal sequence.

(b) Engage in actual sheet metal work supervised by the sheet metal teacher as a coordinator of the student and a journeyman on the job.

Piping

Piping 12 (5 credits)

Introduction

Piping 12 is the introductory course to the piping modules. It provides the student with experiences found in the career field and an overview of the trade area so that an informed decision may be made about future studies.

Objectives

The objectives of the Piping 12 course are:

1. To give the student an understanding of the various pipe trades; plumbing, gasfitting, steamfitting, sprinkler fitter, solar heating pipework, etc.
2. To introduce the student to the safe use of tools and procedures peculiar to the piping industry.
3. To provide an exploratory experience for career choice decision-making.

Prescribed Learning Resource

Meikle, H.E. *Plumbing From the Ground Up.* Holt, Rinehart and Winston. Latest Edition.

Content

1. Career Fields
2. Trade Study
   — apprenticeship and certification
   — structure of the piping industry
   — history and union organization
3. Safety
4. Measurement
5. Pipe Tools and Methods of Joining Pipe
6. Adapting Pipes and Fittings
7. Identifying, Selecting and Ordering Materials

Piping 22A (5 credits)

(Domestic Plumbing)

Introduction

Students may advance to Piping 22A from any of the introductory courses, Industrial Education 10 or Piping 12.

Objectives

The objectives of the Piping 22A module are:

1. To provide the student with experience in following plumbing regulations.
2. To provide the student with the theory and experience necessary to "rough in" and finish domestic plumbing.

Prescribed Learning Resource

Meikle, H.E. *Plumbing From the Ground Up.* Holt, Rinehart and Winston. Latest Edition.

Content

1. Rough-in Procedures
   — plan, layout, cut holes
   — assemble and install drains and vents
   — install water lines
   — rough-in the bathtub
2. Finishing Procedures
   — set water closet (toilet)
   — hang or cut in lavatory basins or vanities
   — connect water lines
   — install water heater
   — finish and test

Piping 22B (5 credits)

(Domestic Heating)

Introduction

Students may advance to Piping 22B from any one of the introductory courses, Industrial Education 10 or Piping 12.

Objectives

The objectives of the Piping 22B module are:

1. To provide the student with learning experiences in the correct installation of hot water heating equipment for a house (home).
2. To provide the student with learning experiences in the correct and safe installation of gas burning appliances.

Prescribed Learning Resource

Blankenbaker, E.K. *Plumbing.* Goodheart-Willcox. Latest Edition.

Content

1. Hot Water Heating
   — sizing and erecting a boiler

— selecting and installing radiation and convection systems
— insulating and preparation for operation
— adjusting and setting controls

2. Gasfitting
   — domestic
   — planning, sizing, laying out, installing and testing gas piping in a house
   — sizing and erecting gas appliances
   — activating, adjusting, setting and servicing gas appliances
   — venting gas appliances for domestic use
   — converting gas appliances for domestic use

Piping 22C (5 credits)

(Commercial and Industrial Heating)

Introduction

Students may advance to Piping 22C after having completed any of the introductory courses, Industrial Education 10 or Piping 12.

Objective

The objective of the Piping 22C module is to provide the student with experiences in the installation of low pressure steam heating equipment.

Prescribed Learning Resource

Blankenbaker, E.K. *Plumbing*. Goodheart-Willcox. Latest Edition.

Content

1. Low Pressure Steam Heating
   — sizing, erecting and installing a low pressure steam boiler
   — selecting and installing radiators, convectors and unit heaters
   — adjust and set controls
2. Applications of Steam Other Than for Heating
   — commercial uses of steam other than for heating
   — hanging and supporting pipe
   — expansion and contraction allowances

Piping 32A (5 credits)

(Drawing and Estimating)

Introduction

Students may advance to Piping 32A upon completion of one of the introductory courses, Industrial Education 10 or Piping 12 and also one "22" level module in piping.

Objectives

The objectives of the Piping 32A module are:

1. To provide the student with opportunities to design and draw up two or three dimensional drawings for a domestic installation.
2. To provide the student with opportunities to interpret drawings and made cost estimates of materials and labor.

Prescribed Learning Resources

D'Arcangelo, B. and Guest, J.R. *Blueprint Reading for Plumbers.* Delmar Publishers. Latest Edition.

Galeno, J.J. *Plumbing Estimating Handbook.* Van Nostrand Reinhold. Latest Edition.

Content

1. Symbols, Scales, Specifications, Rough-In Books, Drawing Instruments, Types of Lines and Drawings
2. Drawing Plans and Isometric Views of Piping
   — plan an elevation sketch
   — isometric drawing

Piping 32B (5 credits)

(Commercial and Industrial Plumbing)

Introduction

Students may advance to Piping 32B from one of the introductory courses, Industrial Education 10 or Piping 12. This course is best taken in combination with any of the other "22" or "32" courses.

Objectives

The objectives of the Piping 32A module are:

1. To provide the student with the opportunity to design piping techniques for commercial buildings.
2. To provide the student with the opportunity to practise installation techniques for commercial buildings.

Prescribed Learning Resources

Meikle, H.E. *Plumbing From the Ground Up.* Holt, Rinehart and Winston. Latest Edition.

Blankenbaker, E.K. *Plumbing.* Goodheart-Willcox. Latest Edition.

Content

1. Roughing-in and Finishing Procedures in Multiple Storied Buildings or Industrial Plants
   — drains in large buildings
   — sleeves and inserts in large buildings
   — prefabrication techniques
   — wall hung fixture
   — sizing rain water leaders
   — "soventing" techniques

Piping 32C (5, 10 credits)

Content

The last module in the piping sequence is open to students who have completed 30 credits or six modules in the major.

The instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously. Individual students, groups of students, or the whole class may elect to study an

area in more detail. This could be in domestic plumbing, commercial plumbing, heating, air conditioning, or any of the modules named in the piping sequence.

(b) Engage in actual pipe fitting or plumbing work supervised by the piping teacher as a coordinator and a journeyman on the job.

(c) Apply some of the time in work study or work experience now common in many schools in the province.

(d) Study the recently designated sprinkler fitter trade and develop skills from earlier units which might apply.

(e) Introduce more advanced students to solar heating systems (i) passive, (ii) active, or (iii) those systems which will use solar panels to supplement existing heating systems for building or water supply.

Welding

Welding 12 (5 credits)

(Introductory Welding)

Introduction

Welding 12 (Introductory Welding) provides the opportunity for the student to explore the subject of welding and develop introductory level skills. Upon successful completion of this module the student may proceed to Welding 22A (Fundamental Welding).

Objectives

The objectives of the Welding 12 course are:

1. To give the student an understanding of the role of the welder in industrial society.
2. To introduce the student to the safe use of tools and acceptable procedures basic to the welding trade.

Prescribed Learning Resource

Pender, J.A. *Welding.* McGraw-Hill Ryerson, 1978. (Student guide and teacher key also available.)

Content

1. Introduction to Welding
2. Safety
3. Fusion Welding
   — oxy-acetylene equipment
   — setting up new equipment
   — gas pressure and flame adjustments
   — shop practices
   — arc-welding, basic process
4. Thermal Separation
5. Measurement, Tools and Shop Equipment
6. Braze Welding and Soldering
7. Fabrication and Repair

Welding 22A (5 credits)

(Fundamental Welding)

Introduction

Welding 22A (Fundamental Welding) provides the opportunity for the student to develop basic welding skills. Upon successful completion of this module the student may proceed to Welding 22B (Intermediate Welding).

Objectives

The objectives of the Welding 22A module are:

1. To provide the opportunity for the student to develop safe working habits.
2. To provide the opportunity for the student to develop fundamental welding skills.

Prescribed Learning Resource

Althouse, Turnquist, Bowditch. *Modern Welding*. General Publishers Ltd.

Content

1. Safety
2. Blueprint Reading and Sketching
   — shape description
   — sketching
   — dimensions
   — symbols
3. Electric Arc Processes
4. Oxy-Fuel Process
   — safety review
   — oxy-fuel torch
   — pipe welding
5. Fabrication and Repair
   — build projects to shop standards
   — repair projects to shop standards

Welding 22B (5 credits)

(Intermediate Welding)

Introduction

Welding 22A (Fundamental Welding) is prerequisite to this module. Welding 22B (Intermediate Welding) is designed to further the student's competencies in welding and introduce him/her to additional processes.

Objectives

The objectives of the Welding 22B module are:

1. To provide for in-depth study and skill development in oxy-fuel and electric arc welding techniques.
2. To introduce the student to oxy-fuel and electric arc specialty techniques.

Prescribed Learning Resources

Althouse, Turnquist, Bowditch. *Modern Welding*. General Publishers Ltd.

Bennett, A.E., Siy, Louis J. *Blueprint Reading for Welders*. Delmar Publishers Ltd.

Content

1. Safety
2. Sketching
3. Blueprint Reading
4. Metal Identification
5. Metallic Arc Welding
   — use of a variety of electrode types
   — fusion
   — pipe welding
6. Oxy-Fuel Welding
   — fusion welding
   — braze welding ferrous and non-ferrous metals
   — brazing dissimilar metals
   — fusion of cast iron (optional)
7. Fabrication and Repair

Welding 22C (5 credits)

(Advanced Welding)

Introduction

Welding 22B (Intermediate Welding) is prerequisite to this module. This module is designed to further the student's competencies in welding and introduce him/her to inert gas welding.

Objectives

The objectives of the Welding 22C module are:

1. To provide the student with the opportunity for in-depth study and skill development, in oxy-fuel and electric arc welding techniques.
2. To introduce the student to specialty techniques.
3. To introduce the student to inert gas welding.

Prescribed Learning Resource

Althouse, Turnquist, Bowditch. *Modern Welding*. General Publishers Ltd., 1976.

Content

1. Safety
2. Sketching
3. Blueprint Reading
4. Electric Arc Processes
5. Special Oxy-Fuel Applications
   — fusion welding non-ferrous metals
   — hardsurfacing
6. Gas Metallic Arc Welding (G.M.A.W.)

7. Gas Tungsten Arc Welding (G.T.A.W.) (optional)
8. Fabrication and Repair

Welding 32A (5 credits)

(Specialization in Welding)

Introduction

Students wishing to enroll in this module must have completed Welding 22A and 22B. It is strongly recommended that they should have completed Welding 22C.

Objectives

The objectives of the Welding 32A module are:

1. To provide the student with an in-depth study of blueprint reading, drawing and sketching, and layout as related to welding.
2. To provide the student with the opportunity to weld using the gas metallic arc welding process.
3. To provide the student with the opportunity to lay out templates related to the fabrication of pipe joints.

Prescribed Learning Resource

Althouse, Turnquist, Bowditch. *Modern Welding*. General Publishers Ltd., 1976.

Content

1. Welding Shop Safety
2. Sketching, Drafting and Blueprint Reading
   — line conventions
   — projections
   — freehand sketching
   — welding symbols
3. Gas Metallic Arc Welding
4. Template Layout and Pattern Development
   — the wrap-around
   — division of pipe
   — angle of cut
   — pipe layout
   — pipe template development
   — pipe welding (optional)

Welding 32B (5 credits)

(Fabrication and Repair)

Introduction

This course emphasizes the systematic planning, design and production techniques encountered in the fabrication and/or repair of various minor and major weldments.

Objectives

The objectives of the Welding 32B module are:

1. To provide the student with experiences in the fabrication and/or

repair of suitable weldable items from drawings, models or other specific instructions.

2. To provide the opportunity for the student to examine basic metallurgy as it applies to welding.

Prescribed Learning Resource

Althouse, Turnquist, Bowditch. *Modern Welding*. General Publishers Ltd., 1976.

Content

1. Welding Shop Safety
   — safety reinforcement
   — accident reporting and recording
2. Fabrication and Repair
   — design and fabrication
   — working from a drawing
   — following verbal direction
   — repair using a variety of welding techniques
3. Metallurgy
   — properties of metals
   — identification of metals
   — classification

Welding 32C (5, 10 credits)

Introduction

The last module in the welding major is open to students who have completed 30 credits or six modules in the major.

The 125 hours of instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously in the welding sequence. Individual students, groups of students or the whole class may elect to study an area in depth. This could be special welding techniques, fabrication of special projects or research in metallurgy.

(b) Engage in actual welding on the job supervised by the welding teacher as a work coordinator and by a journeyman.

Electronics

Electricity-Electronics 12 (5 credits)

Introduction

The introductory electricity-electronics course is a five-credit course which leads into either electricity or electronics.

Objectives

The objectives of the Electricity-Electronics 12 course are:

1. To provide the student with an orientation to the technical and industrial environment.
2. To provide the student with information about opportunities in the fields of electricity and electronics.

3. To provide the student with the electrical theory required to advance to other related courses.

Prescribed Learning Resources

Graham, R. *Explorations in Electricity and Electronics*. McGraw-Hill Ryerson, 1981.

Long, G. *Intermediate Electricity*. 2nd Edition. General Publishers Ltd., 1977.

Content

1. Career Fields
   — occupational information
2. Safety, First Aid, Use of Hand and Power Tools
3. Electricity
   — definition and sources
4. Conductors and Insulators
5. Magnetism and Electromagnetism
6. Electrical Units, Measurement, Circuits, Diagrams and Laws
7. Making Connections Electrical Circuits
8. Systems Study and Project Work
   — audio
   — electrical distribution
   — generation plants
   — broadcast receiver
   — others that are appropriate

Electronics 22A (5 credits)

Introduction

Electronics 22A is a prerequisite to Electronics 22B and 22C.

The course is designed to give the student sufficient skill and knowledge to be able to achieve effectively in subsequent courses in electricity or electronics.

Objectives

The objectives of the Electronics 22A module are:

1. To provide background in the basic principles of active and reactive circuits including their application.
2. To provide opportunities to develop skills in the use of test instruments that apply to active and reactive circuits.

Prescribed Learning Resource

Grob, B. *Basic Electronics*. 4th Edition. McGraw-Hill Ryerson, 1977.

Content

1. Alternating Voltage and Current
2. Inductance
3. Capacitance
4. Capacitive Circuits

5. Alternating Current Circuits
6. Resonance (LCR circuits)
7. Electrical Filters
8. Cathode Ray Tube (CRT)
9. Power Supply
10. Complex Numbers (Optional)

Electronics 22B (5 credits)

Introduction

The module Electronics 22B provides a general outline allowing a large amount of freedom in developing the course content. The module should provide an opportunity for practical experience in the study of the material.

Objectives

The objectives of the Electronics 22B module are:

1. To introduce the student to solid-state electronics.
2. To familiarize the student with current trends in manufacture and design of electronic equipment.
3. To enable the student to test various solid-state circuitry.

Prescribed Learning Resources

Grob, B. *Basic Electronics*. 4th Edition. McGraw-Hill Ryerson, 1977.

Malvino, A.P. *Transistor Circuit Approximations*. 3rd Edition McGraw-Hill Ryerson, 1981.

Content

1. Solid State Fundamentals
2. Junctions
3. Transistors
4. Other Solid-State Devices
5. Integrated Circuits

Electronics 22C (5 credits)

Introduction

This module covers digital logic based on the transistor-to-transistor logic family of integrated circuits. It is designed to familiarize the student with basic logic gates and provide an introduction to large scale integrated circuits used in various related technologies.

Objectives

The objectives of the Electronics 22C module are:

1. To familiarize the student with the digital logic field of electronics.
2. To give the student the opportunity to learn basic binary concepts and logic circuits and study some practical subsystems fundamental to communications, control and computer applications.

Prescribed Learning Resource

Tokheim, R.L. *Digital Electronics.* McGraw-Hill Ryerson, 1981.

Content

1. Numbering Systems
   — numbering system conversion
   — arithmetic functions
2. Fundamental Digital Concepts and Basic Electronic Building Blocks
   — introduction to And's, Or's and Not's
   — basic logic gates
   — logic conventions
   — power requirements of TTL and CMOS IC's
   — logic families
   — radiant emission from semi-conductor PN junctions
3. Boolean Algebra
   — Boolean laws and theorems
4. Codes
   — numeric codes
5. Electronic Realization of Logic Circuits
   — relationship between logic gates
   — combination circuits
   — practical circuits
   — sequential circuits
6. Application of Logic Circuits in Integrated Circuits
   — operations using IC's

Electronics 32A (5 credits)

Introduction

The Electronics 32A course is designed to provide an opportunity for the student to study the theory and practice of radio communication. The student may elect Electronics 32A following completion of Electronics 22B or 22C.

Objectives

The objectives of the Electronics 32A module are:

1. To introduce the student to the theory of radio communication.
2. To enable the student to diagnose, measure and service AM-FM circuits, devices and systems.

Prescribed Learning Resource

Grob, B. *Basic Electronics.* 4th Edition. McGraw-Hill Ryerson, 1977.

Content

1. Power Supply Circuits
   — D.C. power requirements B+
2. Audio Amplifier Fundamentals
   — power amplifiers
   — voltage amplifiers

Electronics 32B (5 credits)

Introduction

Electronics 32B may be elected following the 32A.

This module is designed to provide the student with a basic course on television receivers. It will provide the student with skills and knowledge of the television system that may lead to employment, complement other high school or post high school studies, or satisfy individual avocational interests. The course will provide the student with an opportunity to work with advanced electronic circuitry, of the type present in virtually all homes today.

Prior to registering in this module, it is recommended that the student have a good understanding of basic electronic and electrical theory, be thoroughly familiar with basic electronic and electrical theory, be thoroughly familiar with basic lab test equipment, and have a good understanding of radio receiver operations and servicing.

Objectives

The objectives of the Electronics 32B module are:

1. To provide the student with the opportunity to work with advanced circuitry and test equipment.
2. To introduce the student to the theory of T.V. receivers.
3. To provide the student with skills in T.V. servicing.

Prescribed Learning Resource

Prentiss, G. *Color T.V. Theory and Troubleshooting*. Reston Publishers, 1979.

Content

1. Introduction to Production of T.V. Pictures
2. Television Picture Tube Accessories
3. Television Power Supply
4. Deflection Oscillators
5. Synchronization Circuits and Automatic Frequency Control
6. Vertical Sweep Section
7. Horizontal Sweep Section
8. Video Detector and Amplifier
9. Picture IF System
10. The RF Tuner
11. T.V. Sound System
12. Color Television
13. Antenna and Transmission Lines

Electronics 32C (5, 10 credits)

Introduction

This module covers digital computers. It is designed to familiarize the student with the operation of the computer from both digital logic and programming viewpoints.

Objectives

The objectives of the Electronics 32C module are:

1. To provide the student with a technical knowledge of the computer so that he/she can understand its operation.
2. To provide the student with the opportunity to improve programming skills.

Prescribed Learning Resource

Pasahow, E. *Microprocessors and Microcomputers for Electronics and Technicians*. McGraw-Hill Ryerson, 1981.

Content

1. Advanced Programming and Interfacing (optional)

Electricity-Electronics 12 (5 credits)

(Common Module)

Introduction

The introductory electricity-electronics course is a five-credit course which leads into either electricity or electronics.

Objectives

The objectives of Electricity-Electronics 12 are:

1. To provide the student with an orientation to the technical and industrial environment.
2. To provide the student with information about opportunities in the fields of electricity and electronics.
3. To provide the student with the electrical theory required to advance to other related courses.

Prescribed Learning Resource

Long, G. *Intermediate Electricity*. 2nd Edition. General Publishers Ltd.

Content

1. Career Fields
   — occupational information
2. Safety, First Aid, Use of Hand and Power Tools
3. Electricity
   — definition and sources
4. Conductors and Insulators
5. Magnetism and Electromagnetism
6. Electrical Units, Measurements, Circuits, Diagrams and Laws
7. Making Connections, Electrical Circuits
8. Systems Study and Project Work
   — audio
   — electrical distribution
   — generation plants
   — broadcast receiver
   — others that are appropriate

Electricity 22A (5 credits)

Introduction

The course is designed to give the student sufficient skill and knowledge to be able to achieve effectively in subsequent courses in electricity.

Objectives

The objectives of Electricity 22A are:

1. To provide background in the basic principles of active and reactive circuits including their application.
2. To provide opportunities to develop skills in the use of test instruments that apply to active and reactive circuits.

Prescribed Learning Resource

Clidero & Sharpe. *Applications of Electrical Constructions*. 2nd Edition. General Publishers Ltd.

Content

1. Alternating Voltage and Current
   — A.C. power-generation
   — audio and radio signals
2. Inductance
3. Capacitance
4. Capacitive Reactance
5. Capacitive Circuits
6. Alternating Current Circuits
7. Semi-Conductor and Vacuum Tube Diode
8. Power Supplies

Electricity 22B (5 credits)

(Residential Wiring)

Introduction

Electricity 22B introduces the student to basic residential wiring. The introductory course, Electricity Electronics 12, or Industrial Education 10 and Electricity 22A are prerequisites.

Objectives

The objectives of Electricity 22B are:

1. To introduce the student to concepts of electrical wiring in the home.
2. To allow the student to develop skill in the use of tools, equipment, and instruments peculiar to the electrical field.
3. To familiarize the student with the electrical code and their application.

Prescribed Learning Resources

Canadian Electrical Code. Current or latest approved edition. C.S.A.

Clidero & Sharpe. *Applications of Electrical Construction*. 2nd Edition. General Publishers Ltd.

Content

1. Career Opportunities
2. Safety
3. Residential Wiring Installations
   — planning
   — installation
   — re-wiring
4. Management Practices
   — organization
   — bidding for work
   — employee concerns

Electricity 22C (5 credits)

(Electrical Servicing)

Introduction

Electricity 22C is a five-credit module in electrical servicing.

Objectives

The objectives of Electricity 22C are:

1. To provide the student with skills in troubleshooting electrical appliances.
2. To provide the student with servicing skills.

Prescribed Learning Resource

Clidero, R.D. & Sharpe, K.H. *Applications of Electrical Construction.* General Publishers Ltd.

Content

1. Occupational Information
2. Service Equipment
   — care and use of hand tools and meters
   — finding service information
3. Troubleshooting
   — safety
   — cleaning appliances
   — procedures for finding problems
4. Inservicing Procedures
5. Servicing Domestic Appliances
6. Estimating and Pricing
7. Service Factors

Electricity 32A (5 credits)

(Commercial Wiring)

Introduction

The module in commercial wiring may be in sequence or the student may advance to it directly from Electricity 22B.

Objectives

The objectives of this course are:

1. To provide the student with fundamental skill and knowledge required in electrical construction and to familiarize him/her with tools, fittings and equipment used in industry.
2. To provide a background of Electrical Code regulations so that the student may understand the reason for various restrictions and regulations and so that the student may develop a standard of performance that would enable him/her to enter the electrical construction field upon completion.
3. To introduce the student to the various systems used in providing electrical outlets of all types in large residential, commercial and industrial installations.
4. To familiarize the student with the specialized terminology and equipment of the domestic and commercial heating controls field.

Prescribed Learning Resources

Clidero, R.K. & Sharpe, K.H. *Applications of Electrical Construction.* General Publishers Ltd.

Canadian Electrical Code — C.S.A. Latest approved edition.

Content

1. Technical Drawing
   — plan views dimensioning and symbols
2. Wiring Methods
   — raceways and conductors
   — tools and equipment
   — fittings and boxes
3. Installation of Services and Feeders
   — service entrance
   — protective equipment
   — metering equipment
4. Control Equipment
5. Installation of Lighting Equipment
   — lighting equipment
   — special equipment
6. Heating Controls

Electricity 32B (5 credits)

(Electro-Mechanical)

Introduction

This module on electro-mechanical systems may be taken following completion of Electricity 22C.

This course will provide a helpful background for the student planning a career in the apprenticeship area, if taken in conjunction with, or in sequence with the residential and commercial wiring courses.

Objectives

The objectives of this course are:

1. To introduce the student to all forms of rotating electrical machinery including the principles of operation and electrical theory and calculations.
2. To provide the student with opportunities to work with large and small A.C. and D.C. generators and motors and to gain an understanding of the characteristics of each by a series of experiments and work projects.
3. To provide the proper technical skill and knowledge for the student who may decide to proceed further into the challenging field of electrical technology. This course should enable students to find out if they have the ability and interest to proceed in a technology.

Prescribed Learning Resource

Clidero, R.K., & Sharpe, K.H. *Applications of Electrical Construction.* General Publishers Ltd.

Content

1. D.C. Generators
2. D.C. Motors
3. A.C. Generators
4. A.C. Motors
5. Transformers

Electricity 32C (5, 10 credits)

(Industrial Electricity)

Introduction

The final module in the electricity sequence is available to students who have completed 30 credits or six modules in the major.

Instruction time in this module may be used to:

1. Provide greater depth in modules taken previously. Individual students, groups of students or whole classes may elect to study an area in more detail. The in-depth study could be in residential wiring, electrical servicing or any of the other modules listed in the sequence.
2. Engage in actual wiring or electrical repair work by means of a program co-ordinated by the electricity teacher and under the supervision of a journeyman on the job.

Content

1. Measurement
   — oscilloscope
2. Semi-conductors Theory
   — sub-atomic structure
3. Semi-conductor Applications
   — power supply
   — transistors

Visual Communications

Visual Communications 12 (5 credits)

Introduction

Visual Communications 12 is the first module in the graphic communications field and allows the student to advance to one of the following majors: Drafting 22, Visual Communications 22 and Graphic Arts 22.

(See the graphic arts section for objectives, prescribed resources and content.)

Visual Communications 22A

Introduction

Visual Communications 22A may be taken by a student following an introductory course at the 12 level. This may be Industrial Education 10, Drafting 12 or Visual Communications 12.

Objective

The objective of Visual Communications 22A is to provide practical experiences for the student to learn the necessary terminology, tools and techniques of illustration, photography, and printmaking in order to communicate ideas and information with accuracy and individuality.

Prescribed Learning Resources

Davis, Phil. *Photography*. W.C. Brown.

Cogoli, John E. *Photo Offset Fundamentals*. 4th Edition. McKnight Publishing Co.

Content

1. Photographic Arts
   — introduction
   — image creation
   — image conversion
2. Reproduction Processes
3. Application of Design Principles
   — screen photography
   — plate making
4. Animation
5. Serigraphy
6. Three-dimensional Design
7. Perspective
8. Visual Merchandising
9. Promotional Display

Visual Communications 22B (5 credits)

Introduction

Visual Communications 22B provides the student with a working understanding of photo-illustration and its application to the communication process.

This module may be taken by a student following one of the introductory courses, namely: Visual Communications 12, Industrial Education 10 or Drafting 12.

Objective

The objective of Visual Communications 22B is to enable the student to learn the use of the necessary terminology and techniques of advertising design, illustration, photography and printmaking in order to communicate ideas and information with accuracy and originality.

Prescribed Learning Resources

Cogoli, John E. *Photo Offset Fundamentals.* 4th Edition. McKnight Publishing Co.

Davis, Phil. *Photography.* W.C. Brown.

Content

1. Photo Illustration
2. Application to Mass Production
   — process camera
   — screen photography
3. Reproduction Processes

Visual Communications 22C (5 credits)

Introduction

Visual Communications 22C provides the student with an understanding of the interrelationship of commerical art and other areas of visual communications. Students may take Visual Communications 22C after completing Visual Communications 12, Industrial Education 10 or Drafting 12.

Objective

The objective of Visual Communications 22C is to enable the student to learn the use of the necessary terminology and techniques of advertising design, lettering, creation of forms and display in order to communicate ideas and information with accuracy and originality.

Prescribed Learning Resource

Nelson, Roy Paul. *The Design of Advertising.* 4th Edition. W.C. Brown.

Content

1. Introduction - Image Creation
   — review of interrelationships of areas
   — occupational and educational opportunities
   — current practices in relation to traditions
2. Tools and Materials - Image Creation
   — tools
   — media/medium
   — techniques
   — resource information file
3. Two-dimensional Design - Image Creation
   — shapes
   — forms
   — images

4. Color Theory - Image Creation
   — the psychological characteristics of color
   — the 12 color wheel
   — color schemes
5. Application - Image Creation
   — history
   — illustration
6. Illustration - Image Creation
   — the emphasis of visual reality
   — the illustration of object from life
   — variety of forms of representation
   — the underlying shapes and forms of objects
   — commercial potential of artwork
7. Reproduction Processes

Visual Communications 32A (5 credits)

Introduction

Visual Communications 32A is designed to provide increased skill development in graphic design and processes in order to communicate ideas and information with accuracy and originality. The student may take Visual Communications 32A following Visual Communications 22A or Graphic Arts 22A.

Objective

The objective of Visual Communications 32A is to enable the student to develop increased skill in the use of tools and techniques of illustration, photography and printmaking in order to communicate ideas and information with accuracy and originality.

Prescribed Learning Resource

Cogoli, John E. *Photo Offset Fundamentals*. 4th Edition. McKnight Publishing Co.

Content

1. Specialized Photo-Animation
2. Serigraphy - Printing Processes
3. Planographic Printing Processes
4. Specialized Photography
5. Layout and Design
6. Color Theory
7. Layout and Design

Visual Communications 32B (5 credits)

(Visual Media)

Introduction

The Visual Communications 32B module is designed to provide the student with a basic understanding of the journalism process. This module may be taken any time after completion of the 22A module.

Objectives

The objectives of Visual Communications 32B are:

1. To provide the student with information about the diversity of occupations in the newspaper and publications career fields of visual communications.
2. To explore the difference between newspapers and magazines.
3. To explore the area of photojournalism in relation to principles of design, equipment and techniques.

Prescribed Learning Resource

Cogoli, John E. *Photo Offset Fundamentals*. 4th Edition. McKnight Publishing Co.

Content

1. The Journalism Process
   — introduction: career information, newspapers and newsmagazines, future trends
   — ithography: newspaper style, writing skills, gathering the news, the story
   — cartooning
   — advertising graphics
   — layout and composition
2. The Journalism Process — Image Creation
   — Photography I
   — photo illustration
3. The Journalism Process — Image Conversion
   — Graphics II — conversion processes: line photography, screened photography
   — Photography II — conversion processes: prints, colour separation
4. The Journalism Process — Reproduction
   — Graphics II — planographic process
5. The Journalism Process — Finishing
   — Graphics II — the finishing procedures

Visual Communications 32C (5, 10 credits)

Introduction

The last module of the visual communications sequence is open to the student who has completed 30 credits or six modules in the major.

The instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously. Individual students, groups of students or whole classes may elect to study an area in more detail.

(b) Allow the student to engage in actual work in the visual communications career field supervised by the visual communications teacher and by a craftsman on the job.

Drafting

Drafting 12 (5 credits)

Introduction

This drafting course is designed to provide the student with experiences that allow him/her to sample the various kinds of drawings used within the field generally. These activities should enable the student to make an informed decision about further studies in the drafting field.

Objectives

The objectives of Drafting 12 are:

1. To provide a practical environment which will enable the student to make a more realistic assessment of his/her interests and aptitudes.
2. To allow the student to develop basic knowledge, understanding and appreciation of drafting processes and materials.

Prescribed Learning Resource

French, Urbanek, Svenson, Helsel. *Mechanical Drawing*. S.I. Metric. McGraw-Hill Ryerson.

Content

1. Introduction to Drafting
   — standardized symbolic language
   — quality criteria
2. Drafting Equipment
   — use, care and adjustment of tools
   — characteristics of lines
3. Geometric Construction
   — basic geometric shapes
   — drawing techniques
4. Reproduction of Drawings
   — materials used
   — processes
5. Shape Description
   — multiview drawings
   — pictorial drawings
   — sketching
6. Size Description
   — dimensioning practices
   — special features and specifications
7. Auxiliary Views
   — primary auxiliary views
   (true size and shape of inclined surfaces)
8. Sectioning
   — types of sections
   — materials representation

Drafting 22A (5 credits)

(Engineering Basics)

Introduction

After having completed one of Visual Communication 12, Industrial Education 10 or Drafting 10 or 12, a student may advance to Drafting 22A.

Objectives

The objectives of Drafting 22A are to provide study in:

1. The application of drafting theory and techniques consistent with mechanical drawing standards.
2. Fabrication processes.
3. Materials, their properties and use.

Prescribed Learning Resource

French, Svenson, Helsel, Urbanek. *Mechanical Drawing*. S.I. Metric. McGraw-Hill Ryerson.

Content

1. Shape and Size Description
   — orthographic multi-view projections
   — pictorial drawings
2. Fasteners — Mechanical
   — common thread fasteners
   — special fasteners
   — miscellaneous fasteners
3. Fasteners — Non-mechanical
   — adhesion
   — cohesion
4. Forming Processes
   — casting drawings
   — forging
   — cold heading and powder metallurgy in relation to drawings
   — mechanical drawings
   — other forming methods
5. Elementary Piping
   — materials used
   — joining pipe
   — representing piping systems
6. Detail and Assembly Drawings
   — detail drawings
   — assembly drawings
   — checking
7. Computer Graphics (optional)
   — computer assisted drafting (C.A.D.)

Drafting 22B (5 credits)

(Architectural Drafting)

Introduction

Drafting 22B, architectural drafting, follows Drafting 10, 12 or Industrial Education 10 and prepares the student to enter other drafting modules particularly Drafting 32B.

Objectives

The objectives of Drafting 22B are:

1. To provide the student with basic knowledge and skills in the residential architectural field.
2. To provide the student with knowledge of house building standards, terminology, and design factors.
3. To provide the student with the ability to read and interpret the appropriate building codes and standards.
4. To have the student develop drafting skills and techniques in this field of drafting.

Prescribed Learning Resource

Hepler and Wallach. *Architectural Drafting and Design*. 3rd Edition. McGraw-Hill Ryerson.

Content

1. Architectural Drafting
   — drafting practices
   — planning
   — structural systems
   — working drawings
   — perspective drawings
2. Computer Graphics (optional)

Drafting 22C (5 credits)

(Topographical Drafting)

Introduction

Drafting 22C, Topographical Drafting follows Drafting 10, 12 or Industrial Education 10.

Objective

The objective of Drafting 22C is to provide the student with basic knowledge and skills in the topographical drafting field.

Prescribed Learning Resource

Sloane and Montze. *Elements of Topographical Drawing*. McGraw-Hill Ryerson.

Content

1. Surveying
   — gathering data
   — surveying

2. Topographic Drafting (Cartography)
   — drawing equipment
   — interpretation of field notes
   — photogrammetry
   — geographical data
   — methods of map projection (optional)
   — modelling (optional)

Drafting 32A (5 credits)

(Engineering Graphics)

Introduction

Drafting 32A, Engineering Graphics, follows Drafting 22A and is appropriate for the serious drafting student or the student wishing to enter engineering.

Objectives

The objectives of Drafting 32A are:

1. To provide the student with in-depth studies and experiences in engineering graphics.
2. To develop further understanding and skills required of drafters.

Prescribed Learning Resource

French, Svenson, Helsel, Urbanek. *Mechanical Drawing.* S.I. Metric. McGraw-Hill Ryerson.

Content

1. Auxiliary Views
   — primary auxiliary views
   — secondary auxiliary views
2. Revolutions
   — simple and successive revolutions
3. Intersections and Surface Development
   — intersections
   — developments of truncated shapes
   — triangulation
4. Resolution of Forces
   — resultant of forces
5. Piping Drawings
   — materials used in piping
   — joining pipe and tubing
   — pipe fittings
   — representing piping systems

Drafting 32B (5 credits)

(Advanced Architectural Drafting)

Introduction

Drafting 32B, Advanced Architectural Drafting, follows Drafting 22B. It is designed to increase the student's understanding of architectural drafting.

Objectives

The objectives of Drafting 32B are:

1. To increase the student's knowledge and skills in architectural drawing.
2. To provide the student with the ability to read and interpret the appropriate building codes and standards.

Prescribed Learning Resource

Hepler and Wallach. *Architectural Drafting and Design.* 3rd Edition. McGraw-Hill Ryerson.

Content

1. Advanced Architectural Drafting
   — planning and design
   — structural systems
   — working drawings

Drafting 32C (5, 10 credits)

Introduction

The last module of the drafting sequence is open to the student who has completed 30 credits or six modules in the major.

The 125 hours of instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously. Individual students, groups of students or whole classes may elect to study an area in more detail.

(b) Engage in on-the-job drafting supervised by the drafting teacher as a coordinator and a competent person on the job.

(c) Take instruction in a related field such as building construction or machine shop.

Graphic Arts

Visual Communications 12 (5 credits)

Introduction

Visual Communications 12 is the first module in the graphic communications field and allows students to advance to one of three majors: drafting, graphic arts and visual communications.

Objectives

The objectives of the Visual Communications 12 course are:

1. To provide a practical environment which will enable the student to make a more realistic assessment of his/her interests and aptitudes.
2. To develop basic knowledge, understanding and appreciation of graphic communication materials and processes.

Prescribed Learning Resources

Broekhuizen, R.J. *Graphic Communications.* McKnight Publishers. Latest Edition.

Cogoli, J.E. *Photo Offset Fundamentals.* McKnight Publishers, 1973.

Printing Layout and Design. Delmar Publishers Inc.

Content

1. Introduction
   — commercial art and graphic arts relationship
   — historical developments and tradition
   — relationship with industry
   — occupational information
   — safety
2. Image Creation
   — basic drawing
   — composition and design
   — symbols
   — layout
   — typographic composition
3. Conversion Processes
   — image conversion:
   - elements and principles of composition
   - photographic materials
   - camera types, function and techniques
   - developing and printing
   - silkscreen printing
   - process camera
   - platemaking
4. Production Processes
   — presses
   — silkscreen stencils
   — materials
5. Finishing Processes
   — bindery operations

Graphic Arts 22A (5 credits)

(Image Creation and Composition)

Introduction

Graphic Arts 22A follows naturally from the introductory courses, Industrial Education 10 or Graphic Arts 12, and provides the basis for later work in graphic arts.

Objectives

The objectives of the Graphic Arts 22A module are:

1. To provide a vehicle whereby skills and competencies are gained in areas of image creation.
2. To provide the student with opportunities to work with a variety of composition processes.

Prescribed Learning Resources

Cogoli, J.E. *Photo Offset Fundamentals.* McKnight Publishers, 1973.

Broekhuizen, R.J. *Graphic Communications.* McKnight Publishers. Latest Edition.

Content

1. Introduction
   - — history and evolution of printing
   - — safe operation of tools and equipment
   - — career orientation
2. Image Creation
   - — layout and design
     - • advertising layout
     - • newspaper layout
     - • magazine layout
     - • art services
   - — image assembly
     - • pasteup
     - • keyboard composition
     - • ruling/scribing
   - — typesetting
     - • mechanical
     - • photo-keyboard
   - — typography
   - — imposition
   - — basic typing

Graphic Arts 22B (5 credits)

(Basic and Advanced Offset Press Operation)

Introduction

This course follows naturally the introductory course in graphic arts and should be taught in conjunction with Graphic Arts 22A and 22C.

Objectives

The objectives of the Graphic Arts 22B module are:

1. To provide the student with the opportunity to gain saleable skills in the operation of various offset printing presses.
2. To teach the student proper handling and foremost safe operation of potentially dangerous equipment.
3. To give the student the opportunity to understand and practise basic maintenance.

Prescribed Learning Resource

Broekhuizen, R.J. *Graphic Communications.* McKnight Publishers. Latest Edition.

Content

1. History
2. Safety
3. Maintenance
4. Inks and Their Properties

Graphic Arts 22C (5 credits)

Introduction

The Graphic Arts 22C module will give the student the opportunity to learn about different types of cameras, properties and development of light sensitive materials, and basic procedures in the operation of the enlarger. Emphasis will be placed on the quality of the finished print.

Objectives

The objectives of the Graphic Arts 22C module are:

1. To teach the student the correct use and operation of photographic equipment and materials.
2. To help the student learn the fundamentals of good composition.
3. To help the student develop the ability to present prints for display.

Prescribed Learning Resources

Kodak. *101 Experiments in Photography*. Eastman Kodak. Latest Edition.

Muse, Ken. *Photo Two*. Prentice-Hall Inc., 1977.

Content

1. Safety
2. Photography (black and white — basic)
3. Photography (black and white — advanced)
4. Color Photography

Graphic Arts 32A (5 credits)

(Process Camera, Stripping and Plateworking)

Introduction

Graphic Arts 32A is designed to increase skill in the use of the process camera and improve techniques in stripping and platemaking. Graphic Arts 32A should be taken after completing a course at the "22" level.

Objectives

The objectives of the Graphic Arts 32A module are:

1. To provide the student with the opportunity to learn advanced skills and techniques in the use of the process camera, stripping and platemaking.
2. To develop a high degree of skill and accuracy in the use of the process camera, stripping and platemaking.

Prescribed Learning Resources

Cogoli, J.E. *Photo Offset Fundamentals*. McKnight Publishing, 1973.

Broekhuizen. R.J. *Graphic Communications*. McKnight Publishing. Latest Edition.

Content

1. Process Camera
   — line copy
   — screened copy
   — photo mechanical technique
   — duotones
   — stripping/masking
   — platemaking
   — color separation

Graphic Arts 32B (5 credits)

(Basic Bindery Operations and Finishing)

Introduction

Bindery operation and finishing are fundamental aspects of all graphic arts courses; in 32B the operation of various pieces of sophisticated equipment should be taught, realizing that all graphic arts shops have a limited scope of automated bindery equipment.

Objectives

The objectives of the Graphic Arts 32B module are:

1. To give the student saleable entry skills in the bindery field.
2. To teach the student safe and proper handling of all equipment.
3. To give the student the opportunity to learn about the diverse career choices possible in the bindery and printing field.

Prescribed Learning Resource

Cogoli, J.E. *Photo Offset Fundamentals*. McKnight Publishing, 1973.

Content

1. History
2. Safety
3. Papers
4. Bindery Operations
5. Packaging
6. Related Operations
7. Maintenance
8. Careers

Graphic Arts 32C (5, 10 credits)

Introduction

The last module of the graphic arts sequence is open to the student who has completed 30 credits or six modules in the major area.

The instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously. Individual students, groups of students or whole classes may elect to study an area in more detail. This in-depth study could be image creation and composition, offset press operation, photography or any of the modules named in the graphic arts sequence.

(b) Engage in actual graphic arts work or work study supervised by the graphic arts teacher as a coordinator and a journeyman on the job.

Beauty Culture

Beauty Culture 12 (5 credits)

Introduction

Beauty culture is unique in that it may terminate with the accumulation of 1400 hours of training, enabling the student to attempt the examination for the Provincial Beautician's Certificate of Proficiency. It is projected that under the new regulations for apprenticeship now being considered, the student be required to apprentice an additional 1400 hours prior to his/her examination for certification.

Modules 22A through 32D must be taken in sequence. Entry to 22A may be through the industrial education module, providing it includes a beauty culture unit. Entry may also be through the Beauty Culture 12 module.

Objectives

The objectives of the Beauty Culture 12 course are:

1. To familiarize the student with the career field, the care and maintenance of equipment, safety, hygiene, cosmetology, basic hairstyling and personal development.
2. To provide an opportunity for the student to gain experience in dealing with the public, co-workers and management.
3. To provide an opportunity for the student to develop skills and a knowledge of beauty culture.

Prescribed Learning Resources

Dalton, John W. *The Professional Cosmetologist*, 2nd Edition. West Publishing Company, 1979 c/w Instructor's Manual, Study Guide, Answers to the Study Guide and Review Questions.

Hair Structure and Chemistry Simplified. Milady Publishing Co.

Content

1. Career Field Study
2. Ethics
   — behavior
   — character development
3. Equipment and Implementation
4. Hair Styling
   — hair setting
   — comb-out
5. Physiology
6. Hygiene and Sanitation (1)
7. Cosmetic Chemistry (1)
8. Skin Care and Make-up
9. Manicure (optional)

Beauty Culture 22A (5 credits)

Introduction

Students may advance to Beauty Culture 22A from Beauty Culture 12 or Industrial Education 10 of which beauty culture constitutes 65 hours.

Objective

The objective of the Beauty Culture 22A module is to provide the student with basic knowledge in hairstyling, hair coloring, hair and scalp treatment, cosmetology, facials and histology of skin.

Prescribed Learning Resources

As listed for Beauty Culture 12.

Content

1. Hairstyling
2. Hygiene and Sanitation (2)
3. Hair and Scalp Treatment
4. Hair Coloring - Rinses
5. The Skin
6. Facials
7. Cosmetic Chemistry (2)

Beauty Culture 22B (5 credits)

Introduction

Students may advance to Beauty Culture 22B from 22A.

Objectives

The objectives of Beauty Culture 22B module are:

1. To introduce the student to diseases and disorders of hair, skin and scalp.
2. To familiarize the student with physiology and anatomy.
3. To familiarize the student with the processes of permanent waving.
4. To familiarize the student with basic haircutting.

Prescribed Learning Resources

As listed under Beauty Culture 12.

Content

1. Haircutting
2. Permanent Waving
   — cold wave
   — heat wave
   — chemical disposal
3. Anatomy-Physiology-Histology
   — metabolism
   — the skin and its appendages
4. Disorders and Diseases of the Skin and its Appendages

Beauty Culture 22C (5 credits)

Introduction

The content of Beauty Culture 22C provides a review of previous theory and introduction to customer service.

Objective

The objective of Beauty Culture 22C module is to develop practical skills necessary for customer services through expansion of the previous knowledge gained.

Prescribed Learning Resources

As listed under Beauty Culture 12.

Content

1. Receptionist Training
   — reception
2. Customer Service
   — public relations
3. Hairstyling
   — advanced styling
4. Hair Coloring — Semi-permanent and Permanent
   — color theory
   — predisposition
   — mixing and application

Beauty Culture 32A (5 credits)

Introduction

This senior level module continues the development of skills in hairstyling and in introducing the theory and practice of color removal. An understanding of chemical principles and practice as related to cosmetology is developed.

Objectives

The objectives of the Beauty Culture 32A module are:

1. To develop the knowledge and skills in fashion trend hairstyling (designing, cutting, setting and dressing).
2. To provide the student with the knowledge and skills to practise color removal through the use of bleaches and color strippers.
3. To relate chemistry to the cosmetology industry so as to assist in product knowledge and product content.
4. To develop competency and speed in customer service operations.

Prescribed Learning Resource

Hair Structure and Chemistry Simplified. Milady Publishing Corp.

Content

1. Hairstyling — Fashion Trends
2. Color Removal, Bleaching — Stripping

3. Chemistry of Cosmetology (3)
4. Customer Service

Beauty Culture 32B (5 credits)

Introduction

This module provides the opportunity to develop the technical and creative abilities of the student. Individualized services in the areas of styling, high fashion coloring and hair straightening are emphasized.

Objectives

The objectives of the Beauty Culture 32B module are:

1. To develop appropriate procedures for the selection and implementation of individualized hair fashion.
2. To develop knowledge and skills in the use of creative hair coloring techniques.
3. To use chemical and physical processes for the removal of curl from the hair.
4. To develop competency, speed and salesmanship in customer service operations.

Prescribed Learning Resources

As listed under Beauty Culture 12.

Content

1. Hairstyling — Individualized Trend
   — facial analysis and other characteristics
   — implementations
   — day, cocktail, evening transformations
2. Hair Coloring — High Fashion Techniques
   — creative hair coloring
   — hair color cosmetics
   — implementation of techniques
3. Hair Straightening
   — the chemical process
   — the physical process
4. Customer Service
   — competency
   — speed
   — salesmanship

Beauty Culture 32C (5 or 10 credits)

Introduction

The Beauty Culture 32C module may be offered for 5 or 10 credits. It is designed to provide students with advanced levels of knowledge and skills and provide training in ancillary beauty culture service. A work study component may be utilized in this module.

1. To provide the student with knowledge and skills necessary to implement and practise esthetology services.
2. To provide the student with knowledge and skills to clean, set and dress hairgoods.

3. To provide the student with an opportunity to participate in competition hairdressing.
4. To provide the student with the further development of knowledge and skills of hair color services.
5. To provide the student with the opportunity to further the development of skills related to customer service operations.

Option: To provide the student with the opportunity to participate in a work study program.

Prescribed Learning Resources

As listed in Beauty Culture 12.

Content

1. Esthetology
   — esthetics
   — equipment and tools
2. Wigs and Hairpieces — Hairgoods
   — type of hair and fibres
   — servicing wigs and hairpieces
3. Competition Hairdressing
   — judging
4. Advanced Hair Coloring
   — creative mixing of coloring products
   — safety
5. Customer Service/Work Study

Beauty Culture 32D (5, 10 or 15 credits)

Introduction

The Beauty Culture 32D module may be offered for 5, 10 or 15 credits. It is designed to improve the student's levels of competency and provide an understanding of business management and organization in the beauty culture industry.

A work experience component may be utilized in this module.

Objectives

The objectives of the Beauty Culture 32D module are:

1. To provide the student with advanced levels of customer services.
2. To provide the student with knowledge and skills related to the art of salesmanship.
3. To provide the student with an understanding of the principles of merchandising.
4. To provide the student with individualized techniques for the permanent waving of hair.
5. To provide the student with knowledge of professional ethics and responsibilities.
6. To provide the student with an overview of the principles and practice of shop management.
7. To provide the student with an in-depth review of all theory and practices related to the beauty culture program.

Option: To provide the student with the opportunity to participate in a work experience program (a maximum of 5 credits [125 hours] may be allocated to a properly supervised program).

Prescribed Learning Resources

As listed under Beauty Culture 12.

Content

1. Customer Service
   — competency/speed
2. Salesmanship
3. Merchandising
   — product knowledge
   — promotional activities
4. Advanced Permanent Waving
   — review of chemicals
   — design permanent waving
5. Professional Ethics
   — definition of terms
6. Shop Management
   — overhead
   — personnel
   — bookkeeping
   — labour relations
7. Review of Curriculum
   — reinforcement
   — work experience

Food Preparation

Food Preparation 12 (5 credits)

Introduction

Food Preparation 12 is an introductory course about food and the food preparation industry. The student should spend 75% of his/her time in practical work, such as preparing food and acquiring skill with kitchen tools and equipment. The student will learn about the food industry, nutrition, sanitation and safety.

Objectives

The objectives of Food Preparation 12 are:

1. To assist the student to become aware of the broad range of career opportunities related to the foods field.
2. To familiarize the student with the tools, equipment and materials related to commercial food operations.
3. To assist the student in understanding the importance of nutrition.

Prescribed Learning Resource

Haines. *Food Preparation for Hotels, Restaurants and Cafeterias.* American Technical Society, 1973.

Content

1. Opportunities in the Food Service Industry
2. Utensils and Cooking Equipment
3. Tools and Processes Used to Serve and Portion Foods
4. Tool Processes Used to Cut, Form and Mix Foods for Cooking
5. Safety in the Kitchen
6. Storage of Food
7. Cleaning and Sanitation
8. Measuring and Planning
9. Basic Nutrition and Menu Planning
10. Practical Cooking

Food Preparation 22A (5 credits)

Introduction

This module introduces students to food preparation on a commercial scale. The emphasis will be on the preparation of vegetables, stocks, soups, simple sauces, meat dishes.

Objectives

The objectives of Food Preparation 22A are to:

1. Introduce the student to the principles and practices of preparing foods on a commercial scale.
2. Provide the student with practice in production techniques and the development of food preparation skills.

Prescribed Learning Resources

Morgan. *Supervision and Management of Quantity Food Preparation.* McCutchan Publishing.

Pauli. *Classical Cooking.* CBI Publishing Inc.

Content

1. Vegetable Cookery
   — classification
   — standards
   — cooking techniques
2. Stocks
3. Soups
   — standards
   — classification
   — garnishes
4. Sauces
5. Gravies
6. Meats

Food Preparation 22B (5 credits)

(Cold Kitchen Production)

Introduction

This module gives the students practice in the preparation of food on a commercial scale. Emphasis is placed on desserts, sandwiches, salads, garnishes and appetizers. Artistic skills are practised in displaying cold buffets and in the preparation and merchandising of salads, sandwiches and appropriate desserts.

Objectives

The objectives of Food Preparation 22B are to:

1. Introduce the student to the principles, practices, tools and equipment related to cold kitchen and dessert production.
2. Allow the student the opportunity to practise the methods and organization for cold kitchen and dessert production.

Prescribed Learning Resource

Morgan. *Supervision and Management of Quantity Food Preparation.* McCutchan Publishing, 1974.

Content

1. Cold Kitchen Production
   — sandwiches
   — pantry
2. Salads
3. Appetizers
4. Desserts and Short Pastry Products

Food Preparation 22C (5 credits)

(Short Order)

Introduction

This module on short order cooking gives the student the opportunity to practise the skills and use the knowledge essential to the proficient short order cook.

It is assumed that the student has already developed some skills and this experience can be put to direct use.

Objectives

The objectives of Food Preparation 22C are to:

1. Allow the student to practise short order cooking.
2. Provide information to the student on the practices and principles associated with short order cooking.

Prescribed Learning Resources

Morgan. *Supervision and Management of Quantity Food Preparation.* McCutchan Publishing.

Haines. *Food Preparation for Hotels, Restaurants and Cafeterias.* American Technical Society.

Content

1. Short Order-Cooking
2. Dairy Products
3. Fats and Oils
4. Cereals and Breakfast Foods
5. Serving Food

Food Preparation 32B (5 credits)

(Baking and Decorating)

Introduction

This module covers the preparation and decoration of cakes, cookies, pastries, yeast goods and desserts.

Objectives

The objectives of Food Preparation 32B are to:

1. Introduce the student to the principles and practices underlying the quality production of cakes, pastries and yeast goods.
2. Provide the student with practice in baking.
3. Allow the student to develop some basic cake decorating skills.

Prescribed Learning Resource

Haines. *Food Preparation for Hotels, Restaurants and Cafeterias.* American Technical Society.

Content

1. Baking Ingredients
   — the properties that they exhibit under various conditions
2. Cakes, Pastries and Yeast Doughs
3. Decorating and Filling Cakes, Yeast Goods and Pastries
4. Desserts
   — selection
   — suitability
   — preparation

Food Preparation 32C (5, 10 credits)

(Kitchen Management)

Introduction

Food service management, like other management situations, consists of carrying out the functions of an establishment to satisfy the needs of the consumer and earn a profit for the investor. In this module the student will study sanitation, food processing, nutrition, purchasing, storing and control of kitchen inventory.

The module may be taught for 5 or 10 credits, allowing time for the student to gain some experience in industry under the work study plan.

Objectives

The objectives of Food Preparation 32C are to:

1. Give the student the opportunity to learn the tasks, techniques and skills required by the manager or chef of a kitchen, or the owner of a small food establishment.
2. Allow the student to learn basic management skills and techniques applicable to many situations.

Prescribed Learning Resource

Morgan. *Supervision and Management of Quantity Food Preparation.* McCutchan Publishing, 1974.

Content

1. Managing the Kitchen
2. Nutrition
3. Purchase, Storage and Control of Kitchen Supplies
4. Planning Work Activity
5. Cost Control and Menu Pricing
6. Serving of Food
7. Preparation for Employment

Food Preparation 32D (5 credits)

(Open Module)

Introduction

The final module in the food preparation major is open to the student who has completed all of the preceding modules.

The 125 hours of instruction time available in this module may be used to:

(a) Provide greater depth to a module taken previously in the sequence. Individual students, groups of students or the whole class may elect to study an area in depth.

(b) Engage in actual food service work on the job supervised by the food preparation teacher and a chef on the job.

Health Services

Health Services 12 (5 credits)

Introduction

Health services careers are among the most rapidly expanding areas of career opportunities today. Present health care delivery systems are being expanded and personnel at all levels must be educated to meet present and future needs.

The curriculum, as presented, offers the student the opportunity to explore many health careers at a basic level. This familiarization with health careers hopefully will stimulate an interest in the pursuit of further knowledge.

Objectives

The objectives of the Health Services 12 module are:

1. To provide an opportunity for the student to gain a basic knowledge of anatomy, physiology and pathology with regard to four body systems: skeletal, circulatory, respiratory and muscular systems.
2. To provide an opportunity for the student to gain a knowledge of the principles and practices of first aid and care of the ill and/or injured at home.
3. To help the student understand common medical terminology as used in written and oral communication.

Prescribed Learning Resources

Anthony and Thibodeau. *Structure and Function of the Body*, 6th Edition. C.V. Mosby Company Ltd., 1980.

Memmler and Wood. *The Human Body in Health and Disease* (and the student workbook). J.B. Lippincott Co., Toronto, 1977.

Content

1. Skeletal System
2. Circulatory System
3. Respiratory System
4. Muscles
5. Miscellaneous Injuries and Diseases — emergency treatment
6. Careers

Health Services 22 (5 credits)

Introduction

Health Services 22 provides basic information and the opportunity to practise skills common to a majority of the health services careers.

Objectives

The objectives of the Health Services 22 module are:

1. To help the student to gain a basic knowledge of anatomy, physiology and pathology with regard to six body systems: integumentary, endocrine, nervous, gastro-intestinal, urinary and reproductive.
2. To help the student to gain a basic knowledge of the principles and practices of related patient care procedures.
3. To help the student to understand the common treatments and diagnostic procedures for common diseases affecting the six body systems.
4. To help the student to extend an understanding of common medical terminology for use in written and oral communication.

Prescribed Learning Resources

Anthony and Thibodeau. *Structure and Function of the Body*, 6th Edition. C.V. Mosby Company Ltd., 1980.

Hornemann, G.V. *Basic Nursing Procedures*. Delmar Publishers, 1980.

Memmler and Wood. *The Human Body in Health and Disease* (and the student workbook). J.B. Lippincott Co., Toronto, 1977.

Content

1. Integumentary System
2. Endocrine System
3. Nervous System
4. Digestive System
5. Urinary System
6. Reproductive System

Health Services 32A (5 credits)

Introduction

Health Services 32A follows 22 in sequence and provides more in-depth experiences in the field of health care.

Objectives

The objectives of the Health Services 32A module are:

1. To help the student to gain basic knowledge regarding the progress of normal pregnancy, labor and delivery and the puerperium as well as the complications associated with them.
2. To help the student to gain an understanding of the basic principles of nursing care required during pregnancy, labor and delivery, and the puerperium.
3. To help the student to gain basic knowledge of the fundamental principles of care required for the emotional and physical support of children.
4. To help the student gain a basic knowledge of the treatments and diagnostic procedures for the common diseases affecting the: newborn, infant, toddler, pre-schooler, school-age and the adolescent child.

Prescribed Learning Resources

The Canadian Mother and Child. Health and Welfare Canada.

Draper, H.E. and Draper, M.W. *Studying Children, Observing and Participating.* Chas. A. Bennett Co., 1977.

Content

1. Obstetrics
   - — reproductive system
   - — pregnancy
   - — complications of pregnancy
   - — labor and delivery
   - — post-partum care
2. Pediatrics
   - — physical and emotional care of children
   - — normal growth and development
   - — newborn
   - — infancy
   - — toddlers and pre-schoolers
   - — school age
   - — adolescence

3. Child Care
   — parenting skills
   — basic child care

Health Services 32B (5 credits)

Introduction

Health Services 32B deals with broader aspects of health care including medical nursing, surgical nursing, gerontology and career explorations.

Objectives

The objectives of the Health Services 32B module are:

1. To help the student to gain a knowledge of medical and surgical treatments used for common diseases affecting adults.
2. To help the student to gain a knowledge of the aging process and death and dying.
3. To help the student to gain a knowledge of a selected career field in health care through work study.
4. To help the student to gain a knowledge of the effect of drug use and abuse on the person, family, peers and community.

Prescribed Learning Resources

Kubler-Ross, Elizabeth. *Death and Dying*. MacMillan, 1981.

Licit and Illicit Drugs. Little, Brown and Co., 1970.

Content

1. Medical Nursing
   — alcohol the social drug
   — drug use and abuse
   — cancer
   — psychiatric
2. Surgical Nursing
   — pre-op care
   — post-op care
   — home care
3. Gerontology
   — aging process
   — senior citizens lifestyles
   — death and dying
4. Career Exploration

Horticulture

Horticulture 12 (5 credits)

Introduction

Horticulture is an introductory course in the culture of indoor plants, commercial greenhouse plants, woody ornamentals, involving the maintenance and planning of various landscapes, controlling pests and diseases with the use of equipment and tools. Identification of common varieties of ornamental plants is included throughout the course.

Objectives

The objectives of the Horticulture 12 course are:

1. To give the student an understanding of the broad scope of vocational horticulture.
2. To introduce the student to the safe and acceptable methods of plant production.
3. To develop horticultural skills with the use of equipment, tools and other resources.

Prescribed Learning Resource

Hamilton, et al. *Horticulture for Profit and Pleasure*. J.M. Dent & Sons (Canada) Ltd., 1969.

Content

1. Landscaping
2. Indoor Plants
3. Soils and Fertilizers
4. Food Production
5. Botany and Biology
6. Greenhouses
7. Pruning
8. Floral Design

Horticulture 22A (5 credits)

Introduction

Horticulture 22A expands on the greenhouse production area of horticulture, including food production and ornamental plant materials and the internal structures operating in a greenhouse. Also included are safety practices involved in greenhouse work and soil analysis. A practical project is part of this module.

Objectives

The objectives of the Horticulture 22A module are:

1. To expand the scope of greenhouse production.
2. To encourage the student to be analytical in the application of various techniques in greenhouse production.
3. To complete an individual project relating to horticulture.

Prescribed Learning Resources

See references in curriculum guide.

Content

1. Food and Ornamental Plants
   — identification
   — propagation
   — maintenance, planting, cultural requirements
2. Greenhouse
3. Greenhouse Systems Operations

4. Safety
5. Soils in Greenhouse
   — analysis; pH structure
   — diagnosis
   — remedy application
6. Practical Project

Horticulture 22B (5 credits)

Introduction

Horticulture 22B develops skills in constructing and maintaining landscapes. The content deals with lawn care, tree care, soils, pest control, tools and horticultural equipment used in grounds maintenance.

Objectives

The objectives of the Horticulture 22B module are:

1. To give the student practical experience with tools and equipment commonly used in landscaping.
2. To develop skills and give experience in working with ornamental plants in the landscape.
3. To identify woody ornamentals and various landscape plant materials.

Prescribed Learning Resource

Conover, Herbert. *Grounds Maintenance Handbook,* 3rd Edition. McGraw-Hill Ryerson.

Content

1. Introduction to Ground Maintenance
2. Scheduling and Planning Ground Care Activities
3. Site Preparation
   — grading, soil improvement
   — soil fertility, soil structure
   — choosing suitable plant material
4. Planting Trees, Shrubs, Lawns, Annuals and Perennials
   — identification and selection
   — planting and transplanting
   — propagation of desired species
5. General Maintenance of Landscaped Areas
6. Operation of Equipment and Use of Tools
7. Landscape Construction and Maintenance Specifications

Horticulture 22C (5 credits)

Introduction

Historical aspects of design are integrated into the 22C module dealing with layout and planning of both residential and commercial horticultural areas. Landscape drafting, floral design and merchandising of floral crops is also a component of this module in order to develop artistic skills for the student.

Objectives

The objectives of the Horticulture 22C module are:

1. To give the student practical skills in drafting, analyzing and selecting appropriate landscape plans.
2. To give the student skills in construction and handling of various floral designs and media.
3. To encourage the interested student to pursue and develop any artistic ability he/she may demonstrate.

Prescribed Learning Resource

Hamilton, et al. *Horticulture for Profit and Pleasure.* J.M. Dent & Sons (Canada) Ltd., 1969.

Content

1. A History of Park and Garden Development
2. Objectives and Reasons for Landscaping
   — commercial sites
   — residential sites
3. Design Factors for Commercial and Residential Design
4. Drawing Preparation for Landscape Planning
5. Preparation of a Landscape Plan
6. Cost Estimating
7. Using Annual and Perennial Flowers in a Landscape
8. Design and Use of Indoor Plants
9. Design Work Using Flowers and Plants

Horticulture 32A (5 credits)

Introduction

Horticulture 32A deals with commercial crop and nursery production. The emphasis is on major horticultural greenhouse crops and on the production of woody ornamentals for and in a nursery. The student has a practical project to complete as well as extensive propagation and maintenance of plants.

Objectives

The objectives of the Horticulture 32A module are:

1. To extend production of greenhouse procedures into commercial areas.
2. To explore and propagate various woody ornamental crops.
3. To complete an individual project.
4. To give the student a cross-section of marketing and the harvesting techniques of horticultural products.

Prescribed Learning Resources

See curriculum guide for references.

Content

1. Nursery Site Selection
   — soil
   — climate

— precipitation
— temperature

2. Identification of Woody Ornamentals
3. Propagation and Maintenance of Woody Ornamentals and Commercial Greenhouse Crops
   — sexual
   — asexual
   — pruning
4. Nursery Development
   — planning
   — systems
5. Marketing Procedures
   — distribution
   — product
   — advertising
6. Scheduling of Crops
   — requirements
   — selling date
7. Greenhouse Cost Accounting
   — crop records
8. Practical Project

Horticulture 32B (5 credits)

Introduction

The emphasis in Horticulture 32B is on the theoretical aspects of production in relation to biology, organic gardening, food crop production and ecology of residential, public and commercial areas.

Objectives

The objectives of the Horticulture 32B module are:

1. To relate the practical application of skills to the biological aspects of plant growth.
2. To recognize the importance of the food industry in Alberta.
3. To stimulate the awareness of ecological aspects of horticulture.

Prescribed Learning Resource

Moon, Otto, Towle. *Modern Biology*. Holt Rinehart Inc. and Winston Ltd.

Content

1. Biological Aspects of Horticulture
   — plant taxonomy
   — plant structure
   — plant processes
   — insects and plants
   — plant diseases
2. Horticultural Crops
3. Organic Gardening, Ecological Aspects
4. Ecological Aspects of Parks and Other Landscapes

Horticulture 32C (5 — 10 credits)

Introduction

The Horticulture 32C module is an intensive overview and expansion of the previous modules in horticulture with particular emphasis on landscape construction, pesticide application, equipment operation and business management. Work study is the major component consisting of 125 hours of practical experience in a horticultural industry.

Objectives

The objectives of the Horticulture 32C module are:

1. To review basic horticultural concepts and extend areas of particular interest to the student.
2. To provide an opportunity for the student to participate in an intensive work study program.
3. To enable the student to practice any skills before entering the work force.

The language content and the linguistic and attitudinal behaviours outlined in Level Three of the curriculum guide contain the basic core suggested for the advanced program in French.

Principles, guidelines and suggested instructional materials for implementing French 31 are included in the document entitled, *French 31, Supplement to French as a Second Language,* Tentative Curriculum Guide, Levels 1, 2 and 3 (Secondary), 1974.

D. RECOMMENDED INSTRUCTIONAL MATERIALS*

The outline of language content and linguistic and attitudinal behaviours for LEVELS ONE and TWO in the curriculum guide for French contains the basic core suggested for an initial and intermediate program in this language. Teachers are advised to examine the instructional materials and select structures, concepts and expressions that correspond to the Program of Studies and curriculum guide. As lessons vary in substance, it is important to avoid a materials-centered, page-by-page, lesson-by-lesson coverage.

In schools where students continue into French 11 and French 12, it is recommended that students be exposed to more than this suggested core and that they be given opportunities to develop greater fluency in French than if they were to continue with French 20 and French 30.

No core is suggested for French 11 and French 21, but students completing French 11 should have been exposed to a core at least equivalent to French 20, while students in French 21 should have been exposed to a core at least equivalent to French 30. It is also expected that students having completed French 21 will be more proficient in French than students having completed French 30.

French 10:
French for Mastery, Level 1.
French 20:
French for Mastery, Level 2.
French 30:
French for Mastery, Level 3.
French 11.
Le Français International, Deuxième version (Book 4)
French 21:
Le Français International, Deuxième version (Book 5)

* In schools employing more than one instructinal series in a sequential second language program, it is recommended that a curriculum plan be prepared to include objectives, content areas and evaluation procedures for each course. This would help to avoid duplication of content and would ensure continuity in a sequential program.

UKRAINIAN AS A SECOND LANGUAGE

At the senior high level, two programs are available for Ukrainian as a Second Language:

a) a three-year program;

b) the senior high portion of a six-year program.

The Three-Year Ukrainian Program begins in Grade 10 and ends in Grade 12. It is designed for those school jurisdictions wishing to offer Ukrainian as a second language at the high school level.

The new Six-Year Program in Ukrainian as a Second Language begins in Grade 7 and is part of the six-year sequence, Grades 7 to 12. It is designed for school jurisdictions interested in offering an articulated Ukrainian program beginning in Grade 7 and continuing through Grade 12.

The program is intended to increase the effectiveness of second language learning by greater specificity and improved articulation. Continuity from year to year is essential for achieving the objectives of this program.

The characteristics of the program include:

1. A set of objectives which reflect the Goals of Basic Education together with a rationale to support the inclusion of Ukrainian in a school program;
2. Specification of minimum expectations for each language skill (listening, speaking, reading and writing) and for cultural understanding at the end of Grade 12;
3. Specification of performance statements and linguistic content for each of Grades 10 through 12;
4. Specification of minimum core content for all students as well as elective components for enrichment and remediation;
5. Suggested teaching and learning strategies and evaluation procedures.

A. RATIONALE

The Ukrainian language and culture have been present in Alberta for nearly a century. Until the late 1950's, however, Ukrainian was generally taught after school hours, in evening and Saturday classes. A formal provincial program in Ukrainian as a Second Language is a relatively new phenomenon. This being the case, it is desirable and necessary to strengthen and improve the guidelines for teachers and administrators in order to provide students with learning experiences which lead to more effective outcomes appropriate to local, provincial, national and international scenes.

Canada is a multicultural society with Ukrainians ranking as a significant minority group whose history, traditions and culture are recognized as distinct in the nation. Among Canada's different peoples and cultures, Ukrainians are closely identified with the development and building of the country. It is well known that Ukrainians played a significant role in settling the West. As the Ukrainian language and culture is recognized as a prominent facet of the Canadian mosaic, the study of the Ukrainian language is therefore important to the children of the present generation so that they may assume their rightful and natural heritage of their forefathers. For students of non-Ukrainian origin, the study of Ukrainian as a Second Language may lead to an appreciation and understanding of a culture and language different from their own.

Because Ukrainians have settled in a great number of countries all over the world, Ukrainian has become a lingua franca. To illustrate, Ukrainian is the language of 50 million people of the world living in Ukraine, Canada, the United States, Brazil, Argentina, Western Europe, Great Britain and Aus-

tralia. The student of Ukrainian will discover that Ukrainian is closely related to other Slavic languages. Since there are almost 300 million people of the world speaking a Slavic language, Ukrainian can become an important key to communication in many parts of the world. Students should, therefore, be given the opportunity and encouragement to acquire Ukrainian as an additional language.

In learning Ukrainian, one gains a new awareness and a greater understanding of culture through the realization that there are similarities and differences between Ukrainian and English-speaking peoples. Awareness that the patterns of living of each group are based on one's environment and experiences will, it is expected, lead to greater open-mindedness, flexibility and readiness to understand and accept others as they are.

Languages are tools which enable the user to elicit and receive information, to express opinions and feelings, in effect to communicate. They have different ways of leading speakers to focus on the reality which surrounds them. In our multicultural society, knowledge of another language should thus enable an individual to communicate more effectively in a greater variety of situations related to work or leisure activities. The application of language skills may result in a strong sense of personal achievement and satisfaction. Moreover, the study of Ukrainian fosters a sense of cultural identity.

Many of the skills used in learning another language are the same as those used in learning one's first language. Through the learning of Ukrainian, the learner can become conscious of those skills and how they apply to any language learning. In this process, the learner develops the ability to listen for meaningful sounds, to understand different elements of a sentence, and to analyze a message so as to grasp its meaning. Analyzing messages, reconstructing utterances, and applying acquired knowledge to new situations may enhance the development of problem solving skills. By using the spoken language, one gains a clearer perception of how a language functions, and of what must be said in order to communicate. Through reading and writing in Ukrainian, one becomes more aware of the shared conceptual basis of Ukrainian and English as well as of the contrastive features of the two languages.

Growing global interdependence is a reality which cannot be overlooked. With widespread mobility, knowledge of more than one language is becoming increasingly valuable: tourists, technicians, business people, civil servants, diplomats, athletes — people from all walks of life are going abroad more frequently to visit or to work. Students in our schools cannot foresee where they will be called upon to work. Not only the tourist trade but also multinational companies and many government agencies may consider knowledge of more than one language important in obtaining employment in a world where the job market is more competitive.

It is the purpose of this document to outline a curriculum which will help Alberta's students to develop the skills necessary to communicate with others who use Ukrainian, and to preserve the Ukrainian language and culture.

B. GOALS AND OBJECTIVES

Goals designate the broad, long-range, and significant outcomes desired from a program.

Although the following goals may be given varying emphases, they are identified as those appropriate to learning Ukrainian and are intended to enable the student:

1. To acquire basic communication skills in Ukrainian by:
   1.1 developing the receptive skills of listening, reading and viewing;
   1.2 developing the expressive skills of speaking and writing.
2. To develop cultural sensitivity and enhance personal development by:
   2.1 becoming more aware of his/her own cultural heritage through exposure to Ukrainian;

2.2 developing a positive attitude toward people who speak another language, through a meaningful exposure to the Ukrainian language and culture;

2.3 developing a greater awareness and appreciation of cultural values and lifestyles in Canada and in other countries;

2.4 becoming aware of and appreciating, through instruction and direct experiences, the valuable contributions of Ukrainian-speaking people to civilization.

3. To develop each student's originality and creativity in language by:

3.1 enabling him to apply his skills to new and meaningful situations;

3.2 enabling him to express his own ideas and feelings;

3.3 enabling him to discover a new dimension of his personality.

4. To acquire additional concepts and generalizations about language and language learning by:

4.1 recognizing the basic structural similarities and differences between Ukrainian and other languages;

4.2 acquiring some knowledge of the structure and function of languages;

4.3 developing an awareness of regional, social and functional variations of spoken and written Ukrainian;

4.4 developing a conscious knowledge of the skills and strategies used in learning a second language.

5. To develop a desire to extend or improve his proficiency in Ukrainian through further language study whether for travel, interest, social needs, post-secondary requirements or vocational needs.

Three-year Program — Minimun Expectations for Skill Development and Cultural Understanding, Grades 10, 11, and 12.

The following minimum expectations for skill development and cultural understanding are considered to be part of the core or mandatory content:

1. Listening Comprehension

Upon completion of Grade 12, the student will be able to:

1. Distinguish phonetic differences which affect meaning such as accent changes and case endings;
2. Perceive in the intonation and stress patterns used by the speaker, his intents, feelings or emotions;
3. Demonstrate accurate understanding of familiar questions, statements and instructions which incorporate the basic elements of the program;
4. Comprehend new combinations of structure and vocabulary of the program, including simple and complex sentences, dialogues and short paragraphs;
5. Understand a variety of speakers in structured situations;
6. Understand the general meaning of material containing a limited number of unfamiliar lexical items or readily understood cognates.

2. Speaking

Upon completion of Grade 12, the student will be able to:

1. Produce acceptable pronunciation, intonation, stress and euphonic patterns;

2. Respond orally to cures which require the use of basic linguistic elements of the program;
3. Ask for information on a specific topic;
4. Produce a sentence by recombining known elements;
5. Describe a familiar situation;
6. Ralate a sequence of actions or ideas;
7. Summarize the main ideas of a familiar situation:
8. Express his own ideas and feelings within the range of his language experience and areas of interest.

3. Reading

Upon completion of Grade 12, the student will be able to:

1. Read aloud new combinations of familiar material and material containing some new semantic elements demonstrating correct sound-symbol correspondence, word groupings, basic intonation patterns and accents;
2. Read silently with comprehension;
   2.1 familiar material learned orally,
   2.2 new combinations and rearrangements of familiar materials,
   2.3 material conatining some vocabulary whose meaning can be inferred;
3. Read for information based on themes for which vocabulary had been learned.

4.Writing

Upon completion of Grade 12, the student will be able to:

1. Produce new combinations or variations of given elements from sequentially developed exercises;
2. Respond to given questions based on previously learned material on reading texts;
3. Write from dicatation sentences containing new combinations of learned written material;
4. Make required variations (person, number, time) in given sentences;
5. Write a sequence of sentences from a given outline, from a list of linguistic elements or from visual and oral cues;
6. Express himself in simple original sentences within the limits of the linguistic content specified in the program.

5. Cultural Understanding

At the end of Grade 12, the student will be able to:

1. Relate factual cultural information that has been learned;
2. Recognize the significance of simple gestures, facial expressions, intonations and stress patterns used by the speaker to convey his intents, feelings and emotions;
3. Recognize connotative meanings of familiar vocabulary;

4. Speak and write about differences and similarities within Ukrainian culture;
5. Recognize current manifestations of Ukrainian culture;
6. Interpret everyday cultural patterns;
7. Use common conventions.

Six-Year Program — Minimum Expectations for Skill Development and Cultural Understanding, Grades 10, 11 and 12

The minimum expectations for skill development and cultural understanding are considered to be part of the core or mandatory content. The following expectations are generally arranged by order of increasing difficulty.

1. Listening Comprehension

By the end of Grade 12, the students, by listening, will be able to:

1. Distinguish phonetic differences within the Ukrainian sound system;
2. Demonstrate understanding of familiar questions, statements and instructions which incorporate the basic elements of the program;
3. Demonstrate understanding of new combinations of structures and vocabulary of the program;
4. Grasp the general meaning of material containing cognates and a limited number of unfamiliar lexical terms;
5. Understand a variety of speakers in structured situations;
6. Perceive in the intonation and stress patterns used by the speaker, his intents, feelings or emotions;
7. Understand the general meaning of material containing some unfamiliar cognates or vocabulary items;
8. Recognize specific information and ideas;
9. Demonstrate understanding of weather reports, newscasts, speeches and stories by answering general questions orally and in writing;
10. Demonstrate the ability to understand the intent and attitude of the speaker;
11. Demonstrate the ability to perceive levels of language usage: formal, informal, colloquial, regional;
12. Discuss a passage by answering questions, by selecting the major ideas, and by citing evidence to support conclusions.

2. Speaking

By the end of Grade 12,the student will be able to:

1. Produce accurately Ukrainian sounds, intonation, rhythm, stress patterns, elision and liaison;
2. Respond orally to cues which require the use of basic linguistic elements of the program;
3. Produce a sentence by recombining known elements;
4. Describe a familiar situation;
5. Relate a sequence of actions or ideas;
6. Summarize the main ideas of a familiar situation;

7. Ask for needed information on a specific topic;
8. Express some of his own ideas and feelings and relate personal experiences within the range of his language experience and areas of interest;
9. Interview someone and report findings;
10. Present a summary on a specified topic;
11. Explain how to do a practical activity such as to cook, assemble, construct, repair or play an instrument, buy and sell something;
12. Speak on a selected topic;
13. Exchange ideas in a conversation or discussion.

3. Reading

By the end of Grade 12, the student will be able to:

1. Read aloud recombinations of familiar material, demonstrating correct sound-symbol correspondences, word groupings, basic intonation patterns and rhythm;
2. Read aloud materials containing some new semantic elements demonstrating the ability to apply generalizations about sound-symbol correspondences, word groupings, basic intonation patterns and rhythm;
3. Read silently with comprehension:
   3.1 familiar material learned orally,
   3.2 recombinations and rearrangements of familiar materials,
   3.3 material containing cognates, punctuations, contextual clues and a limited number of unfamiliar lexical items;
4. Read for information, themes for which vocabulary has been learned;
5. Read for specific information and ideas;
6. Read for major ideas contained in a short text;
7. Discuss a passage read by answering questions or by citing evidence to support conclusions;
8. Summarize orally or in writing the content of what has been read;
9. Read newspaper and magazine articles for information and for enjoyment.

4. Writing

By the end of Grade 12, the student will be able to:

1. Copy variations of sentences and phrases learned orally;
2. Rearrange words and phrases;
3. Produce new combinations and phrases learned orally;
4. Answer given questions in writing;
5. Write from dictation sentences of learned written materials;
6. Express himself in simple original sentences within the limits of the linguistic content specified in the program;
7. Make required variations (time, person, number) in given sentences;
8. Answer questions in writing based on a text read;

9. Write a sequence of sentences from a given outline, from a list of linguistic elements, or from visual and oral cues;
10. Write a summary;
11. Write a social letter;
12. Write a business letter;
13. Write a short narrative or descriptive paragraph based on prior reading, oral activity or personal experience.

5. Cultural Understanding

At he end of Grade 12, the student will be able to:

1. Relate factual information that has been learned;
2. Recognize the significance of simple geatures, facial expressions, intonations and stress patterns used by the speaker to convey his intents;
3. Recognize connotative meanings of familiar vocabulary;
4. Recognize current manifeatastionsof Ukrainian culture;
5. Interpret everyday cultural patterns;
6. Use common conventions;
7. Demonstrate knowledge of Ukrainina cultures in Candada and in other countries;
8. Recognize similarities and differences in these expressions of culture and his own;
9. Identifysome of the values, attitudes and ideas of the target culture.
10. Identify some of the contributionsmade by Ukrainians to Canadian society.

C. CONTENT

Specific skills, objectives and content of each grade level are outlined in the Three-year and Six-year Ukrainian Program Curriculum Guides, Alberta Education, 1981.

The objectives and content are selected on the basis of categories of language use. Examples are:

1. Social Conventions
2. Identification of Persons and Things
3. Expressing Actions
4. Expressing Location
5. Destination
6. Describing People and Things
7. Expressing Permission and Desire
8. Expressing Quantity
9. Expressing Time
10. Expressing Possession
11. Expressing Cause and Effect
12. Specification of Persons and Objects
13. Indirect Speech
14. Identification of Person's nationality

These language functions are considered to be main categories of verbal communication. In the classroom, each of the above categories may be realized separately or in various combinations. In this program, expected verbal performances and linguistic content are specified for each category.

Performance Statements

The performance statements indicate the minimum that students are expected to do in verbal communication in the second language.

Linguistic Content

The linguistic content identifies the minimum language structures, sentence patterns, changes in word forms and vocabulary that students are expected to acquire in order to engage in verbal communication.

The categories of language use, the performance statements and linguistic content for each grade level are not arranged in a sequential order, although it is recommended that the specified objectives and content be covered by the end of each grade. It is expected that the content specified in the categories of language use and the skills described in the performance statements and minimum expectations be mastered by the end of Grade 12.

Suggested Vocabulary

The vocabulary is suggested for development of everyday themes and is intended to complement the vocabulary found in primary learning resources. These lists are an additional source for teacher reference and are considered to be elective.

Major Cultural Themes

The following cultural themes are to be developed as part of core content in Grades 10, 11 and 12. (Specific topics within each theme are elective.)

1. Conventions
2. Role of the Family and Community
3. Role of Education in Society
4. Role of Government in Society
5. Influence of Geography, Climate and Natural Resources on the Economic and Cultural Development of the Ukrainian People Living in Different Countries of the World
6. Role of the Arts and Sciences and their Impact on World Cultures.

In summary, the core components consist of:

1. The Minimum Expectations for Skill Development and Cultural Understanding
2. The Content Specified in the Categories of Language Use
3. The Skills and Concepts Identified in the Performance Statements
4. The Major Cultural Themes
5. The Study of Cultures of Ukrainian-Speaking People in the World.

The elective components consist of:

1. The Suggested Vocabulary
2. The Topics Specified for Each Major Cultural Theme.

These elective components are found in the appropriate curriculum guide.

D. LEARNING RESOURCES

1. Three-Year Program

Recommended

1.1 Grade 10:

Duravetz, G. *Ukrainian Conversational and Grammatical,* Level I.

Toronto: Ukrainian Teachers' Committee, Ontario Modern Language Teacher's Association, 1977.

1.2 **Grades 11 and 12:**

Duravetz, G. *Ukrainian Conversational and Grammatical,* Level II. Toronto: Ukrainian Teachers' Committee, Ontario Modern Language Teacher's Association, 1976.

2. Six-Year Program

Prescribed

2.1 **Grades 10 and 11:**

Duravetz, G. *Ukrainian Conversational and Grammatical,* Level II. 2nd rev. ed. Toronto: Ukrainian Teachers' Committee, Ontario Modern Language Teacher's Association, 1976.

Recommended

2.2 **Grade 12:**

Stechishin, J.W. *Ukrainian Grammar.* Winnipeg: Trident Press Limited, 1977.

SPANISH AS A SECOND LANGUAGE

The Three-Year Spanish Program begins in Grade 10 and ends in Grade 12. It is designed for those school jurisdictions wishing to offer Spanish as a second language at the high school level.

The characteristics of the program include:

1. A set of objectives which reflect the Goals of Basic Education together with a rationale to support the inclusion of Spanish in a school program.
2. Specification of minimum expectations for each language skill (listening, speaking, reading and writing) and for cultural understanding at the end of Grade 12.
3. Specification of performance statements and linguistic content for each grade — 10, 11 and 12.
4. Specification of minimum core content for all students as well as elective components for enrichment and remediation.
5. Suggested teaching and learning strategies and evaluation procedures.

A. RATIONALE

To provide effectively the learning experiences needed by the changing society which it serves, the school system must grow and adapt. This language program is presented to facilitate the growth of secondary school instruction in Spanish.

Those who study another language increase their knowledge of their own language as they discover similarities and differences. Learning another language leads to greater awareness and understanding of other cultures and of one's own culture. Language skills are developed which enable the learner to gather, analyze and process information in order to solve problems. The application of these skills extends the range of an individual's human relationships and results in a strong sense of personal achievement and satisfaction.

Growing global interdependence is a reality which cannot be overlooked. With widespread mobility, knowledge of more than one language is becoming increasingly valuable. Tourists, technicians, business people, civil servants, diplomats, athletes — people from all walks of life — are going abroad more frequently to visit or to work. Students in our schools cannot foresee where they will be called upon to work. The study of Spanish could be advantageous, if not vital, in areas such as government or international economics. Multinational companies, in particular, when hiring employees may consider knowledge of more than one language important. Although knowledge of Spanish may not be the primary qualification demanded by an employer, it may well be the deciding factor in obtaining employment in a world where the job market is becoming more competitive.

The Hispanic population in Alberta has grown significantly in the last few years, especially in the large urban centres. This growth has brought Spanish-speaking people into closer contact with us. When one learns Spanish, one learns also of how its cultural setting has been influenced by environment and history. The multi-cultural nature of our province requires citizens to be open-minded, flexible and accepting. Just as the individual can be enriched by new experiences, so can a community be enriched by the influence of other cultures.

Spanish is truly a world language, being one of the five official languages of the United Nations and the official language of Spain and nineteen countries in Hispanic America. More than one quarter of a billion people in the world speak Spanish as their mother tongue. The Spanish language has been taught in Canada at the University of Toronto since 1853. Many provinces, including British Columbia, Ontario, Quebec, Manitoba and Nova Scotia, presently continue this tradition by offering high school Spanish programs. By following a

matriculation program in Spanish, Alberta students can better prepare themselves for further study at any of the more than forty Canadian universities which offer Spanish programs.

The Hispanic culture has not been limited to Europe but followed the pattern of Spanish colonization to the Americas, the Philippines, Africa and other areas. These Hispanic nations have produced outstanding examples of cultural achievement. A working knowledge of Spanish would make the literary and cultural achievements of these nations more accessible to Alberta students.

It is the purpose of this document to outline a curriculum which will enable Alberta students to develop the minimum basic skills necessary to communicate with others who use Spanish, the better to prepare them to take their place in our national and international communities.

B. GOALS AND OBJECTIVES

Goals designate the broad, long-range, and significant outcomes desired from a program.

The following goals may receive varying emphases and are intended to enable the student:

1. To acquire basic communication skills in Spanish by:
   - 1.1 developing listening, viewing and reading skills, including, in the case of listening and viewing, an understanding of intonation, gestures and visual clues which help to convey the message;
   - 1.2 developing speaking and writing skills, including, in the case of the former, the appropriate intonation, gestures and visual clues which help to convey the message.
2. To develop cultural sensitivity and enhance personal development by:
   - 2.1 developing a greater awareness and appreciation of various cultural values and lifestyles;
   - 2.2 developing a positive attitude toward people who speak another language through a meaningful exposure to the Spanish language and the Hispanic culture;
   - 2.3 becoming more aware of one's own cultural heritage through learning Spanish;
   - 2.4 becoming aware of and appreciating, through instruction and direct experiences, the valuable contributions of Spanish-speaking peoples to civilization;
   - 2.5 broadening one's perspectives to include the national and international scene through active participation in a language spoken in Canada and throughout the world.
3. To develop originality and creativity in language by:
   - 3.1 applying one's skills to new and meaningful situations;
   - 3.2 expressing one's own ideas and feelings;
   - 3.3 discovering a new dimension to one's personality.
4. To acquire additional concepts and generalizations about language and learning by:
   - 4.1 recognizing the basic structural similarities and differences between Spanish and English;
   - 4.2 acquiring some knowledge of the structure and function of languages;
   - 4.3 developing an awareness of regional, social and functional variations of spoken and written language;

4.4 developing a conscious knowledge of the skills and strategies used in learning a second language.

5. To develop a desire to extend or improve a proficiency in languages through further language study, whether for interest, post-secondary requirements or vocational needs.

C. CONTENT

Minimum Expectations for Skill Development and Cultural Understanding.

Grades 10, 11, and 12

The following minimum expectations for skill development and cultural understanding are considered to be part of the core or mandatory content.

Listening Comprehension

With the successful completion of this program, the student will have developed the ability to:

1. Distinguish phonetic and phonemic differences within the Spanish sound system;
2. Distinguish Spanish intonation and stress patterns;
3. Demonstrate understanding of familiar questions, statements and instruction which incorporate the basic elements of the program as specified in the curriculum guide;
4. Demonstrate understanding of new combinations of structures and vocabulary of the program;
5. Understand various speakers in structured situations;
6. Listen to weather reports, newscasts, speeches and stories, and answer general questions, orally or in writing;
7. Identify gestures and visual clues which convey a message.

Speaking

With the successful completion of this program, the student will have developed the ability to:

1. Produce, with reasonable accuracy, Spanish sounds, intonation, rhythm, stress and linking patterns;
2. Respond orally using the basic linguistic elements of the program;
3. Produce a sentence by combining known elements;
4. Describe a familiar situation;
5. Relate a sequence of actions;
6. Summarize the main ideas of a familiar situation within the range of one's language experience;
7. Ask for information;
8. Express one's own ideas and feelings within the range of one's language experience and areas of interest;
9. Interview someone using the basic elements of the program;
10. Explain how to do something such as cook, assemble, construct, sew, repair or play an instrument;
11. Speak with prior preparation on a selected topic.

Reading

With the successful completion of this program, the student will have developed the ability to:

1. Read aloud combinations of familiar material, demonstrating correct sound-symbol correspondences, word groupings, basic intonation patterns and rhythm;
2. Read aloud materials containing some new semantic elements, demonstrating the ability to apply generalizations about sound-symbol correspondences, word groupings, basic intonation patterns and rhythm;
3. Read silently with comprehension;
   3.1 familiar material learned orally,
   3.2 combinations and rearrangements of familiar material,
   3.3 material containing cognates, punctuation, contextual clues and a limited number of unfamiliar lexical items;
4. Read for information based on themes for which vocabulary has been learned;
5. Demonstrate comprehension of a passage read by answering questions or by citing evidence to support conclusions;
6. Skim for comprehension major ideas contained in a short text;
7. Read newspaper and magazine articles for information and/or pleasure;
8. Use a unilingual Spanish and a Spanish-English dictionary effectively.

Writing

With the successful completion of this program, the student will have developed the ability to:

1. Write from dictation sentences containing recombinations of learned written materials;
2. Answer in writing given questions;
3. Produce new combinations or variations from given elements;
4. Express himself/herself in simple original sentences within the limits of the linguistic content specified in the program;
5. Make required variations (time, person, number) in given sentences;
6. Write a sequence of sentences from a given outline, from a list of linguistic elements or from visual and oral cues;
7. Write a letter to a friend.

Cultural Understanding

With the successful completion of this program the student will demonstrate knowledge of:

1. Hispanic cultures;
2. Some differences and similarities between these cultures and his own;
3. Cultural connotation of familiar vocabulary;
4. The ability to use social conventions, gestures, facial expressions, intonation and stress patterns employed by a speaker to convey his intentions, feelings and emotions.

D. CONTENT

The objectives and content are selected on the basis of categories of language uses. Examples are:

1. Social Conventions
2. Identification of Persons and Things
3. Expressing Actions
4. Expressing Location
5. Expressing Time
6. Expressing Possession
7. Expressing Quantity
8. Expressing Permission and Desire
9. Describing People and Things
10. Expressing Emotions and Attitudes
11. Expressing Relationships
12. Expressing Cause and Effect

These language functions are considered to be the main categories of verbal communication. In the classroom, each of the above categories may be realized separately or in various combinations. In this program, expected verbal performances and linguistic content are specified for each category.

Performance Statements

The performance statements indicate the minimum that students are expected to **do** in verbal communication in the second language.

Linguistic Content

The linguistic content identifies the minimum language structures, sentence patterns, changes in word forms, and vocabulary that students are expected to acquire in order to engage in verbal communication.

The categories of language use, the performance statements and linguistic content for each grade level are not arranged in a sequential order, although it is recommended that the specified objectives and content be covered by the end of each grade. It is expected that the content specified in the categories of language use and the skills described in the performance statements and general objectives be mastered by the end of Grade 12.

Suggested Vocabulary

The vocabulary is suggested for development of everyday themes and is intended to complement the vocabulary found in primary learning resources. These lists are an additional source for teacher reference and are considered to be elective.

Major Cultural Themes

The major cultural themes of this program are to be developed as part of the core content, but specific topics within each theme are elective. The major cultural themes include:

1. Social relations at the individual level, the family and the community;
2. Economic and political aspects of Hispanic life;
3. Education and cultural features of Hispanic life;
4. Aspects of history and geography of the Hispanic people;
5. Art and play.

In Summary, the Core Components Consist of:

1. The general objectives for skill development and cultural understanding;
2. The content specified in the categories of language use;
3. The skills and concepts identified in the performance statements;
4. The major cultural themes.

The Elective Components Consist of:

1. The suggested vocabulary;
2. The specific topics within the cultural themes.

E. LEARNING RESOURCES

1. **Prescribed**
   I. *Ambientes hispánicos.* Levels 1 and 2. St. Paul, Minn.: EMC Corporation, 1980.
   2. *Invitación al español: Usted y yo; Nuestro mundo.* New York: Macmillan Publishing Company, 1975.

II. **Recommended**

Schmitt, C., Woodford, P. and Marshal, R. *Español: a descubrirlo; Español: a sentirlo.* Levels 1 and 2. 4th ed. New York: McGraw-Hill Book Company, 1977.

MINIMUM REQUIREMENTS FOR LITERATURE

In planning to meet the course objectives outlined in the statement of content, teachers must meet the following minimum literature requirements.

	SHORT STORY	POETRY	SHORT NON-FICTION (ESSAYS)
ENGLISH 13	Required	Optional	Required
ENGLISH 23	Required	Required	Required
ENGLISH 33	Required	Required	Required

	PLAYS	NOVEL	FULL-LENGTH NON-FICTION
ENGLISH 13	Required — One modern	One	Optional
ENGLISH 23	Required — One modern	One	Optional
ENGLISH 33	One modern or one Shakespearean	One	Optional

	SHORT STORY	POETRY	SHORT NON-FICTION (ESSAYS)
ENGLISH 10	Six	Required	Optional
ENGLISH 20	Six	Required	Five
ENGLISH 30	Six	Required	Eight

	PLAYS	NOVEL	FULL-LENGTH NON-FICTION
ENGLISH 10	One modern or one Shakespearean	One	Optional
ENGLISH 20	One Shakespearean	One	Optional
ENGLISH 30	One modern and one Shakespearean	Optional	Optional

CANADIAN LITERATURE REQUIREMENTS

Of the literature taught in each senior high course, the following proportion is to be Canadian literature:

English 13	One third	English 10	One quarter
English 23	One third	English 20	One half
English 33	One third	English 30	One quarter

PRESCRIBED LEARNING RESOURCES SENIOR HIGH LANGUAGE ARTS

ENGLISH 13

1. Kirkland, G. and R. Davies, *Connections I — Imagining,* Gage, 1980.
2. Henderson, J., *Time Of Your Life,* Macmillan, 1977.
3. MacNeill, J.A., *Early September,* Nelson, 1980.
4. Cline, J. et al, *New Voices In Literature, Language and Composition 2,* Canadian Edition, Ginn, 1981.
5. Markham, L.A. and J.A. Pierson (eds.), *Scholastic Composition 4,* Canadian Edition, Scholastic, 1981.
6. McMaster, R.J., *Developing Your Communications Skills,* Academic, 1978.

See note on page 152(xiv).

ENGLISH 10

1. Eckersley, W., *Impact,* Revised Edition, Dent, 1968.
2. MacNeill, J.A. and G.A. Sorestad, *Sunlight and Shadows,* Nelson, 1974.
3. Metcalf, J. (ed.), *Kaleidoscope,* Van Nostrand Reinhold, 1972.
4. Jewkes, W.T., *Man The Myth-Maker,* Second Edition, Harcourt Brace Jovanovich, 1981.
5. McMaster, R.J., *Communicating In Your World,* Academic Press, 1979.
6. Schoen, C. et al, *The Writing Experience,* Canadian Edition, McClelland and Stewart, 1981.
7. Metcalf, J., *New Worlds,* McGraw-Hill Ryerson, 1982.
8. Cameron, R., M. Hogan and P. Lashmar, *Poetry In Focus,* Globe/Modern Curriculum Press, 1983.
9. MacNeill, J., *Sunburst,* Nelson, 1983.
10. Paustian, S., *Through The Open Window,* Oxford University Press, 1983.

See note on page 152(xiv).

ENGLISH 23

1. Cline, J. et al, *New Voices In Literature, Language and Composition 3,* Canadian Edition, Ginn, 1981.
2. Markham, L. et al, *Scholastic Composition 5,* Canadian Edition, Scholastic, 1981.
3. Eckersley, W., *Quest,* Revised Edition, Dent, 1970.
4. Stevens, J. and R.J. Smith, *Canadian Stories of Action and Adventure,* Macmillan, 1978.
5. Davies, R. and G. Kirkland, *Connections 2 — Relating,* Gage, 1981.

See note on page 152(xiv).

ENGLISH 20

1. Buxton, E.W. and B. Buxton, *Prose For Discussion,* Revised Edition, Gage, 1980.
2. Weaver, R. and W. Toye, *Oxford Anthology Of Canadian Literature,* Revised Edition, Oxford University Press, 1981.
3. West, W., *Developing Writing Skills,* Canadian Edition, Prentice-Hall, 1981.
4. Gillanders, C., *Theme and Image I,* Copp Clark Pitman, 1976.

See note on page 152(xiv).

ENGLISH 33

1. Cline, J. et al, *New Voices In Literature, Language and Composition 4,* Canadian Edition, Ginn, 1981.
2. Markham, L.A. et al, *Scholastic Composition 6,* Canadian Edition, Scholastic, 1981.
3. Hodgins, J. and W.H. New, *Voice and Vision,* McClelland and Stewart, 1972.
4. MacNeill, J.A. and G.A. Sorestad, *Tigers Of The Snow,* Nelson, 1973.
5. Davies, R. and G. Kirkland, *Connections 3 — Discovering,* Gage, 1981.

See note on page 152(xiv).

ENGLISH 30

1. Gehle, Q.L. and D.J. Rollo, *The Writing Process,* Canadian Edition, Nelson, 1981.
2. Winkler, A.C. and J.R. McCuen, Dent, *Rhetoric Made Plain,* Canadian Edition, Academic, 1981.
3. Perrine, L., *Story and Structure,* Revised Edition, Academic, 1981.
4. New, W.H. and W.E. Messenger, *Active Stylist,* Prentice-Hall, 1981.
5. Miller, J.E., *The Lyric Potential,* Gage, 1981 (1974).
6. Hogins, J.B., *Literature: Poetry,* Science Research Associates, 1981 (1974).
7. Gillanders, C. *Theme and Image II,* Copp Clark Pitman, 1976.
8. Landry, A.S. *The Heath Introduction to Literature,* D.C. Heath Canada Limited, 1981.

ENGLISH 13-23-33 Handbook

Bell, J.B. and E.P.J. Corbett. *The Little English Handbook for Canadians,* John Wiley and Sons Canada Limited, 1977.

Communications Handbook, Nelson Canada Limited, 1981.

ENGLISH 10-20-30 Handbook

Messenger, W.E. and J. de Bruyn. *The Canadian Writer's Handbook,* Prentice-Hall Canada Inc., 1980.

Shaw, H. *Handbook of English,* Third Canadian Edition, McGraw-Hill Ryerson, 1979.

NOTE:

See Section F of the SECONDARY LANGUAGE ARTS HANDBOOK for recommended novels, full length non-fiction, modern plays, Shakespearean plays for English 13-23-33 and 10-20-30. These are currently under review. Additional revised lists will be made available in the 1983-84 school year.

ELECTIVES

Reading 10

(See the Reading 10 Curriculum Guide.)

Communications 21A and 21B

Introduction

Communications 21A and 21B are offered in module form for three credits each. A maximum of six credits is available to a student taking modules in the communications elective.

The communications modules subscribe to the major objectives as stated in the *Secondary Language Arts Handbook*. All modules focus on the basic skills of writing, reading, viewing, listening, speaking and acting as well as providing for student involvement, excitement and enjoyment. In the communication modules, emphasis has been placed on the improvement in writing skills as an ongoing process.

Course Content

Choice can be made from fifteen modules. Credit value is shown after each module:

Business Communications (3 or 6 — Part A prerequisite to Part B)
Community Relations Network (3 or 6)
English as a Second Language (6)
Film (3 or 6 — Part A prerequisite to Part B)
How, What and Why of Writing (3 or 6 — Part A *not* prerequisite to Part B)
Journalism (3 or 6 — Part A prerequisite to Part B)
Language as a Manipulative Device (3 or 6 — Part A prerequisite to Part B)
Language Growth (3 or 6)
Plain Speaking (3)
Purposeful Speaking (3)
Radio (3)
Speeded Comprehension (3)
Television (3 or 6 — Part A prerequisite to Part B)
Thinking — The Core of Communication (3 or 6 — Part A prerequisite to Part B)
Writer's Workshop (3 or 6 — Part A *not* prerequisite to Part B)

Recommended Material

A number of references are suggested for each module, but no textbooks are prescribed. Refer to the *Secondary Language Arts Handbook* for a list of these materials.

community groups and agencies. Elective topics should help students develop an understanding of current concerns at local, provincial, national and international levels.

IV. LEARNING RESOURCES

1. Prescribed Learning Resources:

Three to ten points and/or non-print resources have been prescribed for social studies instruction at each grade level.

The prescribed resources are those resources that Alberta Education has assessed as the best presently available for achieving the objectives of grade level social studies programs. These resources are listed in the documents below and are available for purchase at a 40% discount at the Alberta School Book Branch.

— *Alberta School Book Branch Catalogue*

— *Social Studies Learning Resources for Elementary Schools*

— *Social Studies Learning Resources for Secondary Schools*

Resources, once prescribed, retain this status for a minimum of three years.

2. Recommended Learning Resources:

Recommended resources include print and/or non-print materials which contribute to one or more social studies objectives, as well as curriculum materials which are complementary to prescribed resources (e.g., teachers' guides). These resources are listed in the documents named above and are available from the Alberta School Book Branch.

WHAT IS PRESCRIBED IN ALBERTA SOCIAL STUDIES: A SUMMARY

1. Three (3) topics for each of Grades One through Ten and two (2) topics for each of Grades Eleven and Twelve are **prescribed** for study.
2. One social issue per curriculum topic is **prescribed** for inquiry. Teachers are encouraged to **modify** specific issues so long as the general intent and meaning are preserved.
3. Value objectives, knowledge objectives and skill objectives are **prescribed** for each topic.
4. The model of social inquiry should be viewed as a flexible process and is **not prescribed**. Rather, the model should be expanded or modified by teachers to reflect the needs of individual students and classrooms. Availability of resources and disciplinary emphasis of the topic will also affect the particular approach to inquiry in which teachers and students engage in social studies.
5. Social action is not **prescribed** but is **encouraged** where possible and when desirable/feasible.
6. The mandatory **core** comprises 75% of the program and is represented by the 34 topics and the statements of objectives. The optional **elective** portion comprises up to 25% of the program.
7. **Prescribed** learning rersources are those listed in these documents for 1981-82: *Alberta School Book Branch Catalogue, Social Studies Learning*

Resources for Elementary Schools and Social Studies Learning Resources for Secondary Schools.

NOTE: Prescribed resources have been identified as being the most suitable for facilitating the attainment of a **majority** of prescribed objectives for a specific topic. They are identified as being the best resources presently available for the 1981 Alberta Social Studies Curriculum.

Recommended learning resources are also listed in the documents named above. These curriculum materials are complementary to prescribed resources. As such, these resources may be used to facilitate the attainment of **some** of the prescribed objectives.

The choice of which particular resources are to be obtained, and how they will be used, is basically a local decision. Teachers may supplement all resources with additional materials identified at the local level. Section 12(2)b of the School Act states that such materials must be approved by the school board.

Resources that are prescribed for use with the Alberta Social Studies Curriculum are as follows:

Grade & Topic	Title	Publisher
10a	*Human Rights: Respecting Our Differences*	Alberta Human Rights Commission
10B/C	*In Search of Canada* Vol. II	Prentice-Hall
11A	Viewpoints in World History Series: *Was There Really a Renaissance? What Were the Causes of the Protestant Reformation? What Forces Guided the French Revolution?*	Van Nostrand Reinhold Ltd.
11A/B	*The Shaping of Western Society* - Text	Holt, Rinehart and Winston
11A/B	*Our Western Heritage*, Units 1-4	Ginn and Company
11B	*Challenge for Change: Geographical Approach to Selected World Issues*	McGraw-Hill Ryerson
11B	*Environmental Concerns, The World*	Harcourt Brace Jovanovich Inc.
11B	*World Prospects*	Prentice-Hall
11B	*The State of the World Atlas*	Pan Books (Collins)
12A	Viewpoints in World History Series: *How Did the Communists Sieze Power in Russia?*	Van Nostrand Reinhold Ltd.
12A/B	*Modern Perspectives*	McGraw-Hill Ryerson Ltd.
12A/B	*Our Western Heritage*, Units 5-9	Ginn and Company
12B	*Why Nations Go To War*	Macmillan Company of Canada
12B	*War and War Prevention*	Hayden Book Company Ltd.
12B	*The Contemporary World: Conflict or Cooperation?*	Oliver & Boyd

TOPIC A: HUMAN RIGHTS IN CANADA

In this topic, students examine Canadian issues involving the competing values of individual freedom and social control. Themes should focus on contemporary and historical concerns such as: freedom of speech (War Measures Act 1970), protection against arbitrary, prejudicial or discriminatory actions by others (Human Rights Commission and Canadian Bill of Rights), language rights (Manitoba School Act), Canadian participation in international human rights movements (Amnesty International), and the role of government at various levels in relation to human rights issues.

Inquiry into this topic should provide students with opportunities to make judgments about their individual responsibilities in protecting the human rights of themselves and others.

Competing Values and Social Issue

Individual Freedom Social Control
To what extent should governments limit personal freedom in order to maintain social control?

VALUE OBJECTIVES	KNOWLEDGE OBJECTIVES	SKILL OBJECTIVES
Students will examine the social issue in order to develop the following understandings, competencies, and attitudes (*Questions in italicized print are illustrative only.*)	Students will gain understanding of the following generalization and concepts, as well as factual information appropriate to the inquiry questions that are listed	Students will develop competence in the following inquiry and participation skills. Skills printed in standard type are emphasized for this topic
1. Develop Understanding of Values 1. Identify personal experiences in which values of individual freedom have conflicted with those of social control. — *What experience have you had involving conflict between individual freedom and social control (personal and immediate as well as abstract and distant)?* 2. Describe situations involving conflict between individual freedom and social control in Canadian history — *How do situations in everyday life involve conflict between freedom and control? How do selected historical Canadian events reflect such a conflict?* **2. Develop Competencies** 1. In value analysis, by assessing the degree of logical consistency in one's reactions to a variety of freedom/control conflicts	**1. Generalization** All societies have systems of social control. Conflicts arise between values of personal freedom and social control when both are sought. **2. Concepts** 1. Justice 2 Citizenship 3 Government 4 Freedom 5 Social control **3. Questions to Guide Inquiry** 1. What are human rights? Which of these exist in Canada today? Do all Canadians have the same human rights? 2 What are the responsibilities of government in maintaining the personal freedom of its citizens? What are some responsibilities of individual citizens to Canadian society?	**1. Develop Inquiry Skills** 1. *Identify and focus on the issue by describing situations and/or historical episodes in which individual freedom is was in conflict with social control.* 2 Formulate research questions and hypotheses for case studies of conflict between individual freedom and social control in Canadian history. 3 Gather and organize data by — reading about, or listening to, firsthand accounts of perceived violations of human rights. — observing and listening to audiovisual material to gain perspectives on human rights issues in Canadian history. — observing and listening to audiovisual materials to gain perspectives on human rights issues in other countries. 4 Analyze and evaluate data by identifying discrepancies in the accounts of participants and observers in human rights case studies.

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